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REFERENCE



THE MEYNTOSH CATALOGUE





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ILLUSTRATED CATALOGUE

OF

McINTOSH

COMBINED

Galvanic and Faradic Battery.

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OFFICE BATTERY,

ELECTRIC BATH APPARATUS, ELECTRODES,

SOLAR MICROSCOPE, STEREOPTICON, ETC.

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PUBLISHED BY THE

McINTOSH GALVANIC AND FARADIC BATTERY CO.,

192 AND 194 JACKSON STREET,

CHICAGO, ILL.

783.



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# ELECTRICITY

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The following historical sketch of Electricity shows how little was known by the Ancients, and those living up to the present century, of Electricity:

"The science of electricity owes its name to an observation attributed by Diogenes Laertius to Thales, one of the seven wise men of Greece, who flourished about 500 years B. C., like his remote successor, Franklin, as a natural philosopher. The observation in question was, that when amber had been rubbed it acquired the property of attracting light bodies, and from the Greek name (electron) comes our term electricity."

The electricity of the torpedo was also known to the ancients. Pliny informs us, that, when touched by a spear, it paralyzes the muscles and arrests the feet, however swift. Aristotle adds that it possesses the power of benumbing men, as well as the fishes which serve for its prey.

*The influence of Electricity on the human body*, and the electricity of the human body itself, were also known in ancient times. Anthero, a freedman of Tiberius, was cured of the gout by shocks of the torpedo; and Walimer, the king of Goths, was able to emit sparks from his own body. Eustathius, who records this fact, also states that a certain philosopher, while dressing and undressing, emitted occasionally certain crackling sparks, while at other times flames blazed from him without burning his clothes. Such are the scanty gleanings of electrical knowledge which we derive from the ancient philosophers; and, though several writers of the Middle Ages have made occasional references to these facts, and even attempted to speculate upon them, yet they added nothing to the science, and left an open field for research of modern philosophers.

Although this singular attractive force was discovered by an ancient philosopher more than 2,000 years ago, it remained a sealed book, like all other great forces, and nothing definite was known of this mysterious power until, in 1600,

DR. GILBERT, OF COLCHESTER, ENGLAND,

Physician to Queen Elizabeth, published a work on magnetism. He first used the word electricity. Until his investigations, no progress had been made toward elucidating or classifying these phenomena, or adding to their number.

He found that a large number of substances were excited like amber by friction, and attracted light bodies; that their capacity of doing this was greater in cool, dry weather, than when the air was warm and moist, and that many other substances were apparently deficient in this property.



*In presenting our Catalogue to the Profession, we take pleasure in calling attention to these new combinations, knowing that medical men appreciate instruments devised to meet their wants. With this in view, and the fact that our apparatus is one more step in advance of the old forms, we only ask a candid consideration of its claims and a fair trial.*

*To relieve the monotony of these pages and interest those who have paid little or no attention to this subtle force, we give a short historical sketch and a few words in regard to the progress of modern inventions.*

*The inquiry is often made, "Is electricity used by leading medical men?" To answer this we give a few clinical cases from standard journals, by the most eminent physicians of the age.*

*We have endeavored to make the illustrations so plain they will be understood by all who may read these pages.*

*If this Catalogue is received with the approval we trust it will be our efforts will not have been in vain.*

*McIntosh Galvanic and Faradic Battery Co.*



frogs jumped whenever a spark was drawn from the machine. In observing this, it occurred to him that perhaps he had discovered a more delicate means for detecting electricity in the atmosphere. It was a clear evening in the early part of September, and no appearance of electric phenomena was in the air. Fixing an iron hook in the spine of each frog, he suspended it from an iron railing. Behold! movements appeared in the frogs, various in character and quite frequent. That moment was the birth of the science of galvanism. At once there flashed on the mind of Galvani the query, "What causes the movements?" There was no electricity in the air; the electric machine was far away, inside of the house. Could there be electricity inside the frogs themselves? From that moment until he died, he lived in an atmosphere of experiments. Frogs without number were slaughtered, and all for the purpose of proving to himself and others that it was animal electricity that caused the movements. Other scientific men were stimulated to investigate the subject. Volta, about this time, was studying the mysteries of electricity, and invented the voltaic pile, or, in other words, the modern galvanic battery. He demonstrated that chemical action on two different kinds of metal, when brought in contact by connecting wires, generated a current of electricity, and, when passed through the muscles of a frog, would cause motion.

#### THIS GIVES US THE MODERN GALVANIC BATTERY.

Electricity, generated by the means of two metals and some acid solution which acts on one of these metals, is called chemical electricity. Only one of the metals is acted on by the acid. For instance, a strip of copper and zinc united by a wire and immersed in a weak acid solution, constitutes a galvanic battery. The zinc is the metal which generates the electricity, and the copper serves as a conductor. The electricity flows from the zinc to the copper through the liquid, and from the copper to the zinc through the wire, thus making a complete circle.

Chemical electricity is most conveniently generated by the reactions that take place between two metals and some acid solution. As a matter of economy, zinc is the metal selected to be acted upon by the acid, which generates the electric force, the other metals acting merely as conductors.

Many new batteries have been devised, but all are based on the same general chemical principles, that chemical action is attended by the evolution of electricity.

We give a few illustrations of simple and compound galvanic circles, to aid the reader to understand the terms used. In the formation of a galvanic circle, one or more cells can be used; where only one cell is used, it is called a simple galvanic circle. Fig. 1 constitutes such a circle.

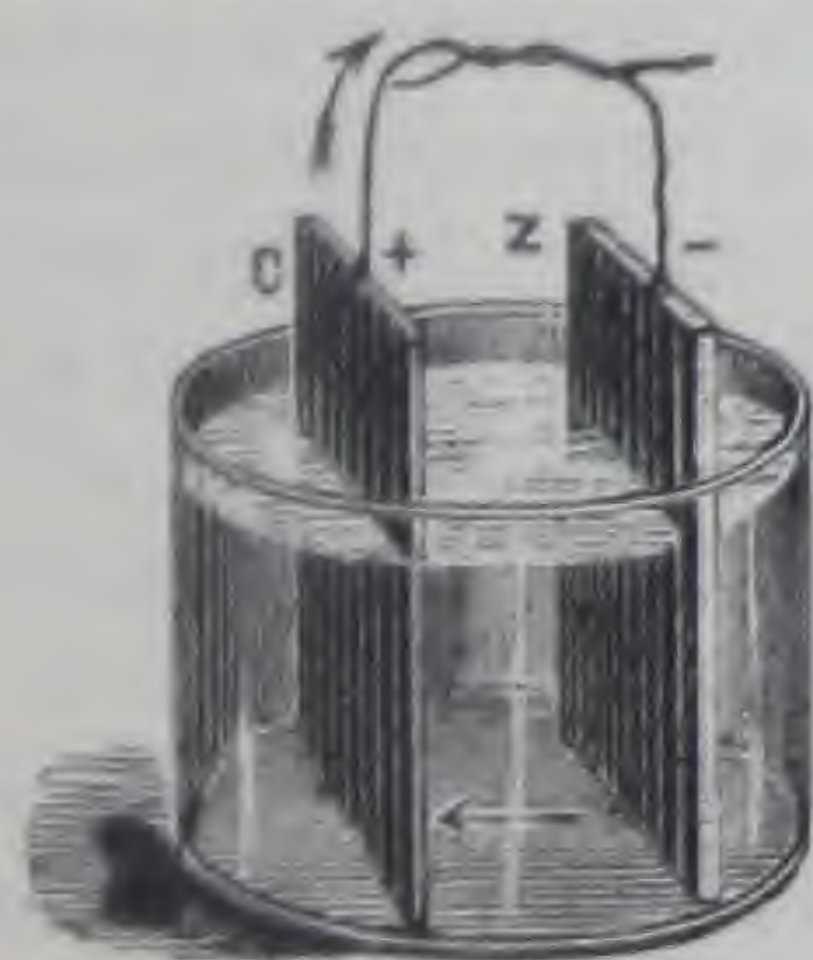


Fig. 1.

Letters C and Z represent respectively copper and zinc plates, placed in dilute acid and connected by a wire. Electric action takes place on the surface of the zinc, covered by the liquid. Positive electricity is generated at the zinc plate, and flows through the liquid to the copper, from the copper through the wires to the zinc. Thus a constant current is established over the wires. See direction of the arrows. The terminal end of the wire leading from the zinc plate is called the negative pole or electrode, and the one leading from the



Not long after Gilbert,

#### ROBERT BOYLE

added many new facts to the science of electricity. By means of a suspended needle, he discovered that amber retained its attractive virtue after the friction which excited it had ceased, and the diamond retained this property for several minutes after being rubbed. Boyle added to Gilbert's list of electrics several new ones.

To these discoveries of Boyle, his cotemporary,

#### OTTO VON GUERICK,

added the highly important one of *Electric Light*. Having cast a globe of sulphur in a glass sphere, and broken off the glass, he mounted the sulphur ball on a revolving axis, and excited it by the friction of the hand. By this means he discovered that light and sound accompanied the discharges of electric sparks from the machine.

In 1745, a Bishop of Commin, in Pomerania,

#### VON KLEIST

by name, passed through a cork, in the neck of a flask, an iron nail connected with an electric machine. The flask contained mercury, which was capable of collecting the electricity. On touching the nail, Von Kleist received a severe shock. Another adventurer, a Frenchman, about this time, tried a similar experiment. He passed a wire from an electrical machine into a bottle containing water, holding it in his right hand, and, when a turn was given to the machine, on touching the wire with his left hand, the shock was so terrible that he declared he would not receive another like it for a French crown. Up to the year 1747, no theory was given to account for these curious phenomena.

This same year, the great American philosopher,

#### DR. BENJAMIN FRANKLIN,

made wonderful discoveries in regard to electricity. He found, by his experiment, that a flash of lightning, seen during a thunder-storm, was an immense spark of electricity, the same as that from the electric machine, only infinitely more powerful.

*The publications of these investigators* directed the attention of other philosophers to the subject, and this soon became one of the most interesting and popular fields of scientific research. New discoveries were rapidly made, and, with every new step gained, the subject assumed greater importance, extending in unexpected directions, so as to embrace phenomena of the highest interest to man, and linking itself with departments of physics, with which it was before supposed to have no relation.

Thus investigations have continued for more than 200 years to attract the profound attention of the ablest philosophers, and at this day no subject is more worthy of study, or opens a more promising field for original research, than the boundless range of electricity in its many departments.

Still, for a long series of years, electricity was of no practical use; but in the year 1786,

#### GALVANI, PROFESSOR AT BOLOGNA,

was experimenting with an old-fashioned electric machine that lay near a dish of frogs that had been prepared, it is stated, for his sick wife, he noticed that the



It seems as though inventions were increasing in arithmetical progression. Of all the forces,

### ELECTRICITY

undoubtedly opens the widest field for investigation. The three forms of matter, solid, liquid and gaseous, were considered a settled fact, until Prof. Crookes, of London, England, startled the scientific world by his announcement that there was still another condition of matter "ultra gaseous," which he had demonstrated by the aid of an electric current passed through sealed tubes containing less than the millionth part of an atmosphere of air.

### ELECTRICITY IN HORTICULTURE.

Not long since, quite an excitement was created over the experiments of Dr. Seimens in growing plants with the illumination of the electric light. He proceeded in his experiments with the idea that electricity might furnish all the requisites of sunlight in the development of plant growth.

More than ten years before this time, experiments had been made with the electric light in this direction, and it was found that this light, applied to plants in badly lighted places, resulted in a growth equal to that when plants had the benefit of sunlight.

Dr. Seimens made a sunlight of his own by placing an electric light of 1,400 candle power in the midst of his plants, and at a distance of two meters, he found it equal to average daylight at the season of the year in which he was experimenting.

He found the results the same, so far as plant developments were concerned, as though the plants were under the direct influence of daylight. He found, more than this, the growth of vegetation was greatly accelerated. The electric light was found competent to produce all the mechanical effects of daylight, such as bringing about the re-erection of foliage plants that "sleep" at night, and that seedlings of mustard which had never seen daylight, were quite as green and vigorous.

The London *Daily News* says that Dr. Seimens exhibited to an audience before whom he lectured, a pot of tulips in bud, which the electric light brought into full bloom in some three-quarters of an hour. Time and further experiments will demonstrate more fully the actual value of this discovery. Its application is limitless.

*The application of electricity* to plant growth is another of these grand experiments with this subtle life-power, as we may almost call it, going on to-day.

### EXPERIMENTS HAVE ALSO DEMONSTRATED

that a current of electricity when passed through a plant, and the earth containing it, hastens its growth. Here is a field open to the scientist which is unexplored. Who dare affirm that the day is not far distant, when garden vegetables will be grown by the aid of electricity in a few days, ready for the table, and at any season of the year? Ten years ago, had any man dare predict that the human voice would be transmitted by the aid of electricity through a metallic wire from one point to another, he would have been considered a fit subject for a lunatic asylum. Yet such is the fact, and the physician can be called, though miles away, by the telephone, and, by the same means, send his prescription to the druggist to be filled. While the scientific inves-



copper is called the positive electrode. When the wires are separated, the circle is broken, and the current ceases to flow.

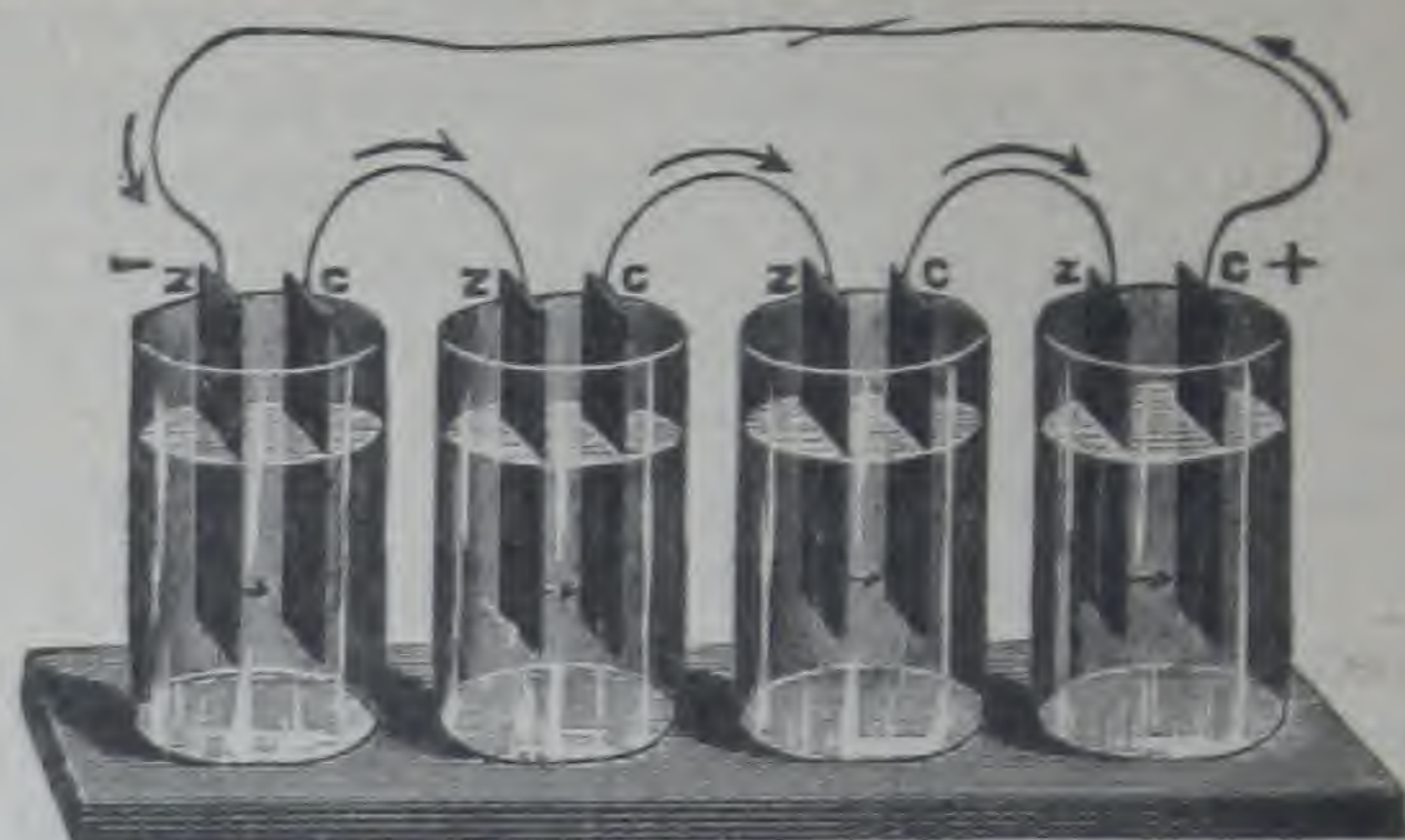


Fig. 2.

The compound galvanic circle or galvanic battery is composed of two or more simple cells or circles. (See Fig. 2.) They are so connected that the copper (C) of one cup is joined to the (Z) zinc of the next, and so on through the whole series. The arrows indicate the direction of the current.

#### THIS IS A WONDERFUL AGE,

and of all the records either in history or tradition of any people, it is undoubtedly a fact that the people living in this age are the wisest and most fortunate. Until within the last century, the people of the civilized world were content with the primitive conditions of nature, and resigned themselves to a few human conditions.

It is true that Architecture, Sculpture and Painting were carried to a high degree of Art. Aside from these, very little had been done to soften the path of toiling millions.

It is also true that many of the principles of Science, like the foundations of immense structures, were slowly being developed all this time, without which modern inventions would never have been.

When truth was discovered and placed on record in the volume of improvement, the inventor had less with which to contend. The truth of the old adage, "Necessity is the mother of invention," is seen when we behold the impatience of men with the old methods of communication, manufacture, etc., as we approach the present age. Not content with the tedious interchange of thought, printing and the power-press is invented; sympathizing with toiling women, the sewing machine appears; disgusted with the old scythe and sickle, the mower and reaper is brought forth to do the work of a hundred men; tired with the slow mode of travel on foot and with the horse, steam is harnessed and compelled to do the work of a continent; disgusted with the dim light of the oil lamp, gas is generated, and conveyed through pipes for hundreds of miles to light the darkness of a city; impatient with the slow way of transmitting thought, modern ingenuity harnessed electricity with an iron harness, and forthwith the telegraph and telephone appear; still not content even with the bright light of gas, steam power revolves the magnet, and from the carbon points shines forth the sun-like electric light.

The poet can no longer sing of "words spoken never to be repeated again," for their vibrations can be recorded on the revolving cylinder of the phonograph and echoed back a hundred years hence.



speculative philosophy, and too prone to abandon the paths of observation and sound induction.

From the want of apparatus and the ignorance of its different modes of manifestation, electricity, as a therapeutic agent, was seized upon by the charlatan and neglected by intelligent practitioners of medicine. By a curious coincidence, the discoveries in electric science and improved apparatus were accompanied by great discoveries in regard to the functions of the nervous system. While Oersted, Ampeere, Faraday and others were making rapid strides in electric science, Sir Charles Bell, Majendie, Marshall Hall, Claude Bernard, Brown-Sequard and others were unraveling the intricacies of the nervous system. In no era of the world has there ever been such activity in scientific investigations, and the applications of science to the material comfort and welfare of mankind.

At last the votaries of medicine contribute their quota, and many of the most eminent of the profession are devoting their talents and energies to the therapeutical effects of electric force in the treatment of disease.

It is in keeping with the claims of electricity as a remedial agent, to name a few of the many diseases and conditions in which it is indicated and successfully used by many of the most scientific medical men in this country and Europe:

Paralysis,	Vomiting,
Spinal Paralysis,	Impotency,
Hysterical Paralysis,	Suspended Animation,
Paralysis from Lead,	Tumors, by Electrolysis of,
Muscular Paralysis,	Ulcers and Bed-Sores,
Facial Paralysis,	Rheumatism,
Infantile Paralysis,	Epilepsy,
Locomotor Ataxia,	Nervous Exhaustion,
Chorea,	Neuralgia,
Anæsthesia,	Post-Partum Hemorrhage,
Deafness, from want of sufficient	Inertia of the Uterus,
nerve supply,	Dyspepsia,
Nasal Catarrh,	Constipation.

A remedy needs no stronger guarantee of its usefulness to the medical profession than the testimony of eminent medical men who have used it with success.

We therefore give a few clinical cases from the leading journals of this country and Europe, treated by physicians whose names are widely known to the profession:

DR. C. H. RICHET (PARIS).

[From London *Lancet*, June, 1880, page 522.]

In an article on Vivisection and its Use in Therapeutics and Hygiene, he refers to the use of electricity in the following manner: "Of the most undoubted methods of nervous or muscular affections, electricity stands foremost. Galvani, the discoverer of dynamic electricity, experimented on frogs; and, since his time, numberless *savants* have not scrupled to make martyrs of innocent animals for like gain. They have taught us to estimate the effect of the electric current on nerve and muscle. The muscle whose nerve is divided rapidly becomes fatty and incapable of function. *Electricity prevents*



tigator has been busy with the mechanical and chemical effects of electricity, the scientific physician has made known to the medical world that it bears close analogy to nerve force, and is a powerful therapeutic agent.

A QUOTATION FROM GAILLARD'S MEDICAL JOURNAL, 1880, substantiates this statement. Electro-Therapy is now an important specialty in medicine. The close analogy of electric to nerve force at once caused attention to be directed to its employment in the treatment of nervous diseases; but experiment has shown that it is applicable to the treatment, the relief and cure of other pathological conditions. Electricity may be applied to produce sudden shock, by collecting it in a Leyden jar, or increased by means of the Electric Battery, or continuously, or by the interrupted Faradic current. Thus it may be used as a tonic in cases of nervous debility, or, in cases of paralysis, so as to take the place of nerve force which presides over functions of nutrition. The nutrition of the paralyzed limb is thus sustained, and, likewise, the revival of nervous energy promoted. It is apparent, from the close analogy of electricity to nerve force, that this agent embraces a wide range of morbid conditions. Through the nervous cords, which act as conductors, every part of the animal organism can be reached. In this way, secretion, and elimination of morbid products may be promoted, and the organ or apparatus restored to healthy action. The three great forces of nature are heat, light and electricity. These are the forces under whose influence vegetation is produced. Heat and moisture cause the germ of life in seed to awaken; the materials stored up for the use of the embryo undergo changes, both chemical and mechanical, so as to be fit for appropriation. The architecture of the plant begins. A spire shoots up from the bud, under the influence of the sun's light, the food afforded by the atmosphere is appropriated. Forces are active at the root, forces are active in the blade. There is no doubt, in my opinion, but that electricity is one of the active forces which contributes to plant growth. We have all the conditions of its generation—heat, moisture, unequal heating of different mineral substances, causing thermo-electricity. We also have chemical action. It is impossible to draw a line of demarkation between vegetable and animal structure, and doubt not that heat, light and electricity are the physical forces under which animal structure is built up. The light of the sun is as necessary to the vigor and health of the animal as of the vegetable kingdom. Indeed, as already stated, the two shade into each other so as to render it impossible to say where the vegetable ceases and the animal begins. Electricity, being one of the forces which contributes to the animal organism, is necessary to functional health.

The various conditions under which electricity is manifested enable us to apply it to a variety of morbid conditions. Its wonderful decomposing power (electrolysis) has been utilized by the physician. The intense heat incident to its manifestation, by certain combinations, has enabled the surgeon to substitute, in many cases, the cautery for the knife; indeed, to apply it to the section of morbid growths not remedial by the knife.

It may be stated, that, in order that progress shall be had in any branch of science, appropriate apparatus is necessary. Scientific speculation is a great lever, but it must be controlled by experiment; speculation must be tested by experiment, for the human mind is too apt to be seduced by the pleasures of



CASE IV.—From the *Medical and Surgical Reporter*, New York, reported by Ed. C. Harwood: An infant aged nineteen days had been narcotized by morphine. He was relieved by means of the Faradic current.

CASE V.—Reported by Prof. W. H. Pancoast (*Medical and Surgical Reporter*, May 9, 1874): The patient had taken 120 grains of chloral and 8 grains of morphia. The battery was used fourteen hours, and life saved.

Such are some of the wonderful effects of electricity (Faradism) in restoring suspended animation. Should not every practicing physician conversant with such facts supply himself with first-class electrical apparatus that is portable and convenient to use at a moment's warning?

### THE FARADIC CURRENT IN INTERMITTENT FEVER.

*St. Petersburg Medical Wochenschrift*, No. 40, 1879, contains a lengthy paper by Dr. Ludwig Schroeder, in which he reports forty-two cases of intermittent fever treated by the Faradic current. Many of these had stubbornly resisted all forms of medication. Quinia would, of course, interrupt the regularity of recurrence; but neither quinia nor arsenic would reduce the splenic enlargement nor prevent relapse. As in all cases previously reported, one electrode was kept over the left hypochondrium, while the other was moved up and down over the splenic region. From eight to fourteen sessions usually suffice to effect a perfect cure, even without any administration of quinia. Of the forty-two cases reported, only two suffered from relapse, and only one failed to be entirely cured.

### TREATMENT OF NEURALGIA.

Electricity, say eminent medical writers, who have given special attention to its use in the treatment of this painful affection, has often been efficacious. The testimony of those who have had great experience in neuralgia is stronger than that which can be cited in behalf of any other remedy. Dr. Hammond, of New York, says: "Above all local means, not only for relieving the pain in any particular paroxysm, but also for effecting a permanent cure, electricity stands first." He also considers the galvanic current as vastly superior to the induced current. Dr. Anstie is of the same opinion. To quote his own words, he says: "The constant current, as I now estimate it, is a remedy for neuralgia unapproached in power by any other, save blistering and hypodermic morphia; and even the latter is often surpassed by its permanent effect." Drs. Beard and Rockwell, who have found electricity efficacious, affirm that by its use the majority of cases will be cured or permanently improved.

### THE TREATMENT OF POST-NASAL CATARRH.

READ BEFORE THE PHILADELPHIA COUNTY MEDICAL SOCIETY, SEPT. 24, 1879,  
BY WILLIAM R. D. BLACKWOOD, M. D.

He says of electricity: "Of all therapeutic remedies, I value none more highly than electricity, which convinced me of its value through the importunities of a patient whom I was treating at the time, for myalgia, and who suffered badly from post-nasal catarrh. He insisted that electricity would cure his catarrh; and so it did, contrary to my opinion. It cannot, of course,



*this change.* In former days, patients, whose motor nerves were destroyed by disease or injury, were condemned to remain permanent paralytics. Frequent galvanization is now applied to prevent this paralysis—keeping the muscle alive until the nerve regains its function. In a very large number of nervous diseases—neuralgia, paraplegia, ataxia, hemiplegia—*excellent results follow electrical treatment.*"

### ELECTRICITY IN THE OPERATING-ROOM.

At Guy's Hospital, both surgeries and the operating-theater are now connected direct with the electrifying-room, so the surgeon may have the current at his disposal at any time when he may require it. He presses a small stud, which rings a bell in the electrician's room, and points out on an indicator where the current is required. The latter is then turned on without loss of time. At night, the operator can obtain the current by a simple movement of a spring, the indicating apparatus in the battery-room registering the fact, and also betraying the negligence of the operator if the current is not turned "off" when not required. The arrangements are complete and work satisfactorily, and Mr. Seymour contemplates carrying them out into the medical wards, so as to avoid the necessity for shifting batteries to that part of the hospital where the current is required.

### ARTIFICIAL RESPIRATION BY ELECTRIZATION IN CASES OF APPARENT DEATH BY DROWNING OR SUFFOCATION, Etc.

From "Electricity in Medicine and Surgery, with Cases to Illustrate."

BY JOHN J. CALDWELL, M. D.

It has been demonstrated by actual experiment that electric force can be used as a substitute for nerve power.

Dr. Willson Philips, of England, severed the pneumogastric nerve of a rabbit after it had eaten some parsley, and, after the death of the animal, the contents of the stomach were examined and found undigested. A similar experiment was made, but a current of galvanism was passed along the nerve, and continued for twenty-six hours; breathing continued as long as the current was kept up. The animal was killed and the stomach examined; the parsley was completely digested. Thus electricity supplied nerve force.

The following cases illustrate the beneficial effects of electricity to restore suspended and impaired vital functions:

CASE I.—In summer of 1873, I was called to see a child, Jennie C., suffering from a poisonous dose of laudanum. Every other means except electricity had been tried, without benefit. The laudanum had been swallowed some twelve hours. A powerful current was continued for more than three hours, with complete restoration. The respiration, from nine the minute was increased to eighteen or twenty, when the pupils began to dilate, the pulse became normal and consciousness was restored.

CASE II.—In 1874, I was called to attend a person in the Maryland Inebriate Asylum, who attempted suicide by taking opium. The usual remedies had been tried, and proved unavailing. A Faradic current was applied, and continued from 3 A. M. until 7 A. M. The respiration rose from seven to eighteen the minute. Patient restored.



made to the long list of remedies which have been tried and found wanting; of all the remedies mentioned, the only one which has proved of any real service is electricity." "Other physicians have since tried this remedy with great success, notably, Prof. Thomas, of New York, and I think it well to ask the attention of the profession anew to this matter."

The same article refers to a case treated by Dr. Phillippo, of Kingston, Jamaica: "The case was that of a lady who had nearly lost her life from vomiting in two previous pregnancies, large quantities of blood having been evacuated from the stomach; the same symptoms were progressing, when the Doctor, having read my paper on this subject, concluded to try electricity. After the first application, she could eat and relish chicken soup, and on the following day, chicken." Other cases are cited with equally good results, after all other treatment had failed.

### ULCERS AND BED SORES.

For some time, ulcers have been treated with electricity by eminent medical men, and in a majority of the reported cases, with success. Galvanization serves to cure in these cases, partly by its electrolytic effects. One electrode may be applied to the ulcer, and the other to the nearest large nerve-branch or plexus, or to the spinal cord.

Prolonged mild currents are not painful, but rather tend to relieve the pain and establish a healthy action in the sluggish ulcer.

This quotation, found in the *Medical Record*, September 28, 1878, from Dr. Herrick, in regard to a patient treated by him for ulceration and other difficulties of the womb, tends to show the practical value of a mild galvanic current in the treatment of ulcers. He says: "I had a patient under treatment for about ten days; previous to making the application of a mild galvanic current, I had given the usual treatment of injections, unguents, etc., without any perceptible change in the ulceration or leucorrhœa, and the only way my bad patient improved was, that the instrument (a uterine supporter) had kept the uterus in its proper position. In thirty-six hours after the galvanic attachment was made, I examined the patient and found healthy granulation instead of the unhealthy ulcer, without any evidence of granulation, as it had existed before; I also found that the leucorrhœa had stopped almost entirely, a circumstance which the patient stated had not taken place for a year before. In one week, there was neither ulceration nor leucorrhœa. I have two more cases that I am treating in the same manner, one an old ulceration, and the other with an old and obstinate leucorrhœa. They are both doing as well as could be desired."

### ELECTRICITY IN THE TREATMENT OF POST-PARTUM HEMORRHAGE.

BY ALEX. P. SHAW, M. D., ST. LOUIS.

During the last ten months, I have had to treat five cases of uterine hemorrhage occurring after the extrusion of the secundines and prior to the tenth day after accouchement, and in each instance electricity was used to produce contraction of the womb with the happiest result, as will appear from the following summary of the case:

CASE 1. Had been under the care of my esteemed friend, Prof. G. M. B. Maughs, during the first stage and first half of the second stage of labor; but



be relied on in every case, but it is a valuable adjunct. Either the galvanic or the Faradic current may be necessary; sometimes both. But the induced current appears to be the most generally applicable, and it is much the more easily managed of the two."

### OPERATING BY THE ELECTRIC LIGHT.

From *London Lancet*; page 216.

"On the 11th inst., Mr. Berkeley Hill operated on vesico-vaginal fistula, in University College Hospital, while the vagina was lighted up by Mr. Coxeters' application of the glowing platinum. The apparatus consisted of a fine platinum wire twisted into a small knot. Through this knot was sent a continuous galvanic current, strong enough to maintain the wire at a white heat. A strong light was maintained for more than an hour, close to the margin of the fissure, without impeding the manipulations of the operator."

### AUTOMATIC MEDICAL ELECTRICITY.

From *Atlanta Medical and Surgical Journal*, December, 1879.

Dr. Francis Imlach, in the *Practitioner*, describes some very ingenious and useful devices for the application of electricity to paralytics: "Take a hemiplegic patient, and, by automatic electric arrangement, make him raise the dragging limb as he walks, and stand as firmly upon it as upon the other." Dr. Imlach has a number of other arrangements, acting on the same automatic principle, by which various other forms of paralysis can be treated. His idea is evidently a good one, and will probably meet with much favor

### DISEASES OF CHILDREN.

From *Beard and Rockwell*, page 602.

"The diseases of children, in which electricity has been found of service, are the following: Cholera, Whooping-cough, Cholera Infantum, Laryngismus Stridulus, Marasmus and General Debility, Incontinence of Urine, Vomiting, Infantile Paralysis. 'We have found general faradization and central galvanization alone so successful in cases of general chorea, that we have rarely had occasion to experiment with other methods.' "

*Marasmus and General Debility*.—"Cases that were fast failing were restored, and, in one or two instances, life apparently saved by the treatment." In sixteen cases of whooping-cough, treated mainly by central galvanization, the result was improvement in every case."

Dr. Lent, of Cold Spring, informs us that he has had excellent results in the treatment of vomiting in children by faradization.

Dr. O'Riley, of Louisville, Ky., reports good results from faradization in cholera infantum.

### ELECTRICITY IN THE VOMITING OF PREGNANCY

is now being used by many of the most eminent medical men in the treatment of this distressing condition. A quotation from an article in the *Medical Record*, of June 22, 1878, by Dr. Lent, the originator of this treatment will give an idea of its practical value. He says: "Medical men have called attention to this distressing and intractable condition. Reference has been



*Current Selector.* A contrivance for bringing any desired number of elements into the circuit.

*Commutator.* An arrangement for reversing the current.

*Electrode.* An instrument for the application of Electricity.

*Electrometer.* An instrument by which the force of an electric current is measured.

*Element.* Couple, pair or cell.

*Electrolysis.* Electro-chemical decomposition.

*Electroscope.* Same as Galvanoscope.

*Faradic Current.* The induced current. The term is applied both to the electro-magnetic and magneto-electric currents, since they were both discovered by Faraday, called also secondary, interrupted, induced, inductive, to and fro, indirect, electro-magnetic and magneto-electric, the term Faradic is more universally used.

*Faradization.* The use of the Faradic current.

*Galvanoscope* (Galvanometer). An instrument by which we detect small quantities of electricity and distinguish between negative and positive.

*Hydrostat.* An arrangement to prevent accidental escape of battery fluid from the cells.

*Interrupted Current.* Broken, intermitted. The Faradic is necessarily interrupted by the apparatus that generates it, the galvanic may be continuous or interrupted.

*Insulator.* A poor conductor of electricity.

*Insulated.* Placed on non-conducting supports, or covered with non-conducting substances

*Labile Current.* An application in which one or both the electrodes are moved or glided over the surface.

*Magnets.* Substances that have the property of attracting iron.

*Negative Pole.* Where the current passes out, called also zinc-pole or cathode.

*Non-Conductor.* Glass, Resin, Vulcanite and all substances that do not transmit electricity freely, are thus called

*Poles.* Points where magnetism is concentrated, or where the electric current passes in or out.

*Primary or Inducing Current.* The current that passes through the inner coil of wire in a helix, and that induces a current on the coil that surrounds it. Used erroneously as synonymous with galvanic or constant current.

*Rheotome.* A current breaker.

*Rheotrope.* Current reverser.

*Secondary Current.* That which is supplied by the outer coil of the electro-magnetic machine

*Static Electricity.* Electricity generated by friction.

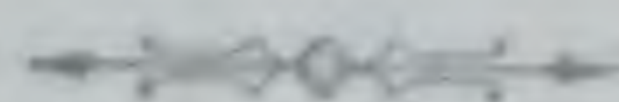


owing to a very pressing pre-engagement, Dr. M. found that he would not be able to longer attend the case, and requested me to take charge of the lady. She was a primipara. The labor lasted about twelve hours, and its every feature was natural. One hour after the extrusion of the afterbirth I left the patient, her womb being firmly contracted and she apparently doing well and quite comfortable; but three hours afterward, I was summoned with the information that she was flooding. On my arrival, I found that the hemorrhage was but slight, and ordered the application of cloths wrung out of ice water to the vulva, and fl. ex. ergot 3 ss every half-hour until the flow was arrested, after which event the ergot was to be given every three hours until three doses had been taken. The treatment proved effective, and no further trouble occurred until the morning of the ninth day, when flooding of an alarming character supervened upon the patient's getting out of bed to answer a call of nature. For its arrest, the child was applied to the breast, the bandage was tightened, friction was made over the abdomen, the womb was kneaded and grasped through the abdominal walls, cold water was poured from a height upon the hypogastrium, ice was applied to the pudenda and introduced into the vagina and the os titillated. Fl. ext. ergot, tinct. caulophyllum and cold acid drinks were administered, and absolute rest enjoined, but still the hemorrhage continued, though considerably diminished in quantity.

At 8 P. M., just as I entered the sick room, profuse flooding again occurred. I found the womb about the size of a year old child's head, soft and doughy to the touch. Compression of the aorta arrested the flow while it was kept up, but the womb could not be made to contract.

I now resorted to electricity, applying it as follows: An insulated vaginal electrode was carried up within the os uteri, and this connected with the negative pole of a Faradic battery. The positive electrode tipped with a piece of moistened sponge, was applied over the fundus of the womb in the hypogastrium. As soon as the circuit was completed, the uterus contracted, expelling quite a quantity of clotted blood, and the flow was arrested, and allowed to traverse the womb for about a minute and then removed. The patient, though fearfully prostrated, made a good recovery, not having had further trouble from hemorrhage.

## GLOSSARY



*Anode.* The positive pole of a battery.

*Cathode.* The negative pole of a battery.

*Conductor.* The wire or cord through which the electricity is conveyed from the battery to the patient.

*Constant Battery.* One capable of giving a continuous current with unvarying constancy.

*Continuous Current.* Term applied to the galvanic current in opposition to the electro-magnetic.



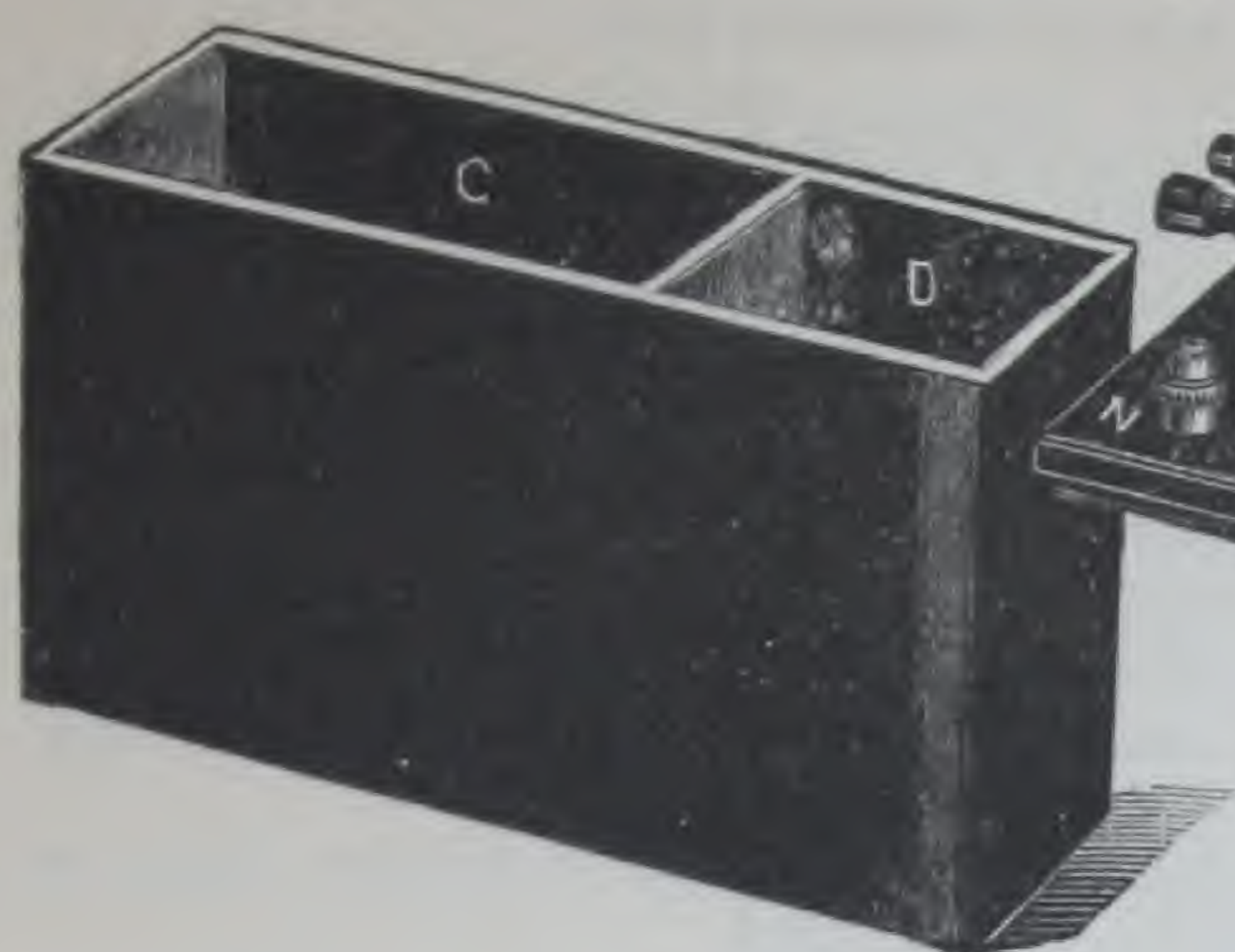


FIG. 3.

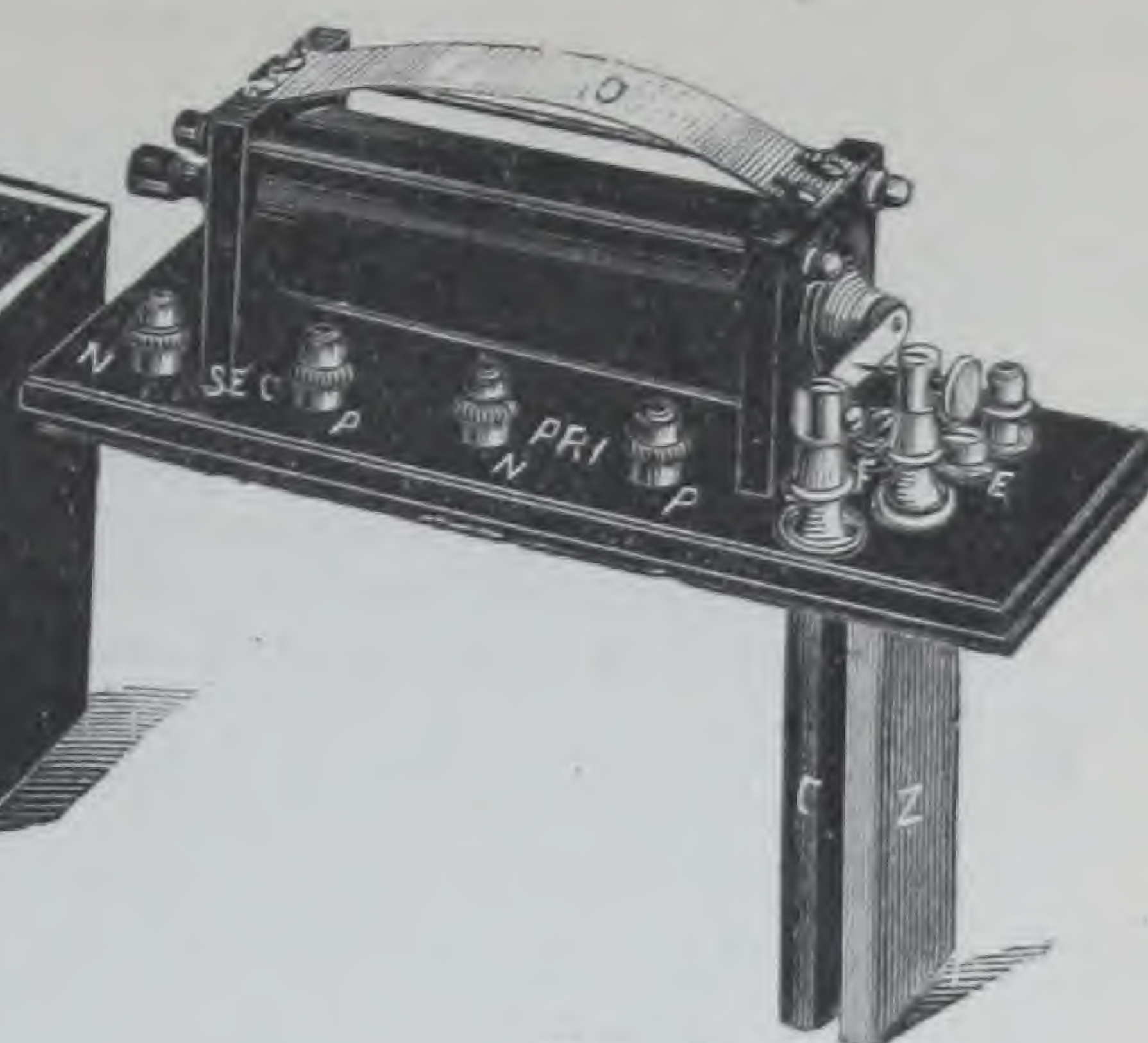


FIG. 4.

AN EXTRA CELL OF LARGE SIZE IS ADDED to the Combined Battery for the purpose of running the Faradic Coil (Fig. 3). This renders the Battery more perfect than any yet offered to the profession. This extra cell gives sufficient power for the Faradic current, and the operator is not obliged to connect and exhaust the current from the galvanic cells. If greater strength is ever needed in an emergency than the extra cell gives, the galvanic cells can be connected with the coil (see directions). The Faradic Coil (Fig. 4) is securely fastened on a plate of polished hard rubber, which serves for a cover to the large cell and drip-cup and to hold the elements. Soft rubber is cemented on the under side of this plate, which is securely clamped over the cell and drip-cup, when the lid of the battery box is closed, by means of pressure on the spring fastened on the coil. Each Battery is furnished with a hard-rubber Electrode box, which is placed in the cover of the battery box. This Combined Battery gives greater quantity and intensity than any ever offered to the profession. It weighs less, occupies less space and is perfectly portable.

A Battery of twelve cells gives a galvanic current of sufficient intensity for a majority of cases the physician may be called upon to treat. With eighteen or twenty-four cells, a physician has at his command all the strength and intensity he will ever require.

The Faradic Coils of our Batteries are wound with special reference to the proportion of wire used, so as to give a pleasant though powerful current, which is free from the sharp, stinging sensation experienced in so many batteries having coils made to give a current of great intensity without regard to quantity.

We call particular attention to our cable conducting cord. This cable-cord is made with flattened spiral copper wires, each surrounding a strong thread; and these are twisted in an insulated bundle. The tips are securely fastened to a bundle of wires, by means of a new device which make the connection perfect. This feature alone recommends our Battery to the profession.

We furnish each Battery with or without a Faradic coil. When combined with a Faradic coil, a physician has at his command two first-class Batteries—a Galvanic, giving sufficient quantity and intensity for treating any disease, electrolysis, etc., and a Faradic, giving an induced current of sufficient strength and intensity to treat any disease where it is indicated.

Great care is taken in the manufacture of every part of this Battery, as none but skilled machinists and electricians are employed to do the work, and first-class material is used.

All the metal work is finely nickel-plated and polished. Every part of the Battery is so perfectly made that, in case any part is broken, a duplicate can be furnished and put in place without any trouble.



## DESCRIPTION OF THE McINTOSH COMBINED GALVANIC AND FARADIC BATTERY.

This Battery is constructed on an improved plan. The zinc and carbon plates are arranged in couples, and securely clamped to hard-rubber plates with thumb screws. Thus any of the couples can be removed by simply loosening a screw. The thumb screws are also used for binding posts. By this manner of connecting, the plates are brought nearer together than in any other Battery, thus giving less internal resistance. The cells are made in sections of six and a drip-cup, composed of one solid piece of hard rubber. By this arrangement, one section can be handled, emptied and cleaned as easily and quickly as one cell. It also prevents the liquid from running between the cells, as is the case when single cells are used, and danger of breaking, as is the case with glass cells. The drip-cup on the side of each section of cells is to receive the zinc and carbon plates when removed from the cells. We manufacture these cells in our factory, and carefully test them with acid the same strength as Battery fluid. By this test we know that every cell is perfect before it leaves the shop.

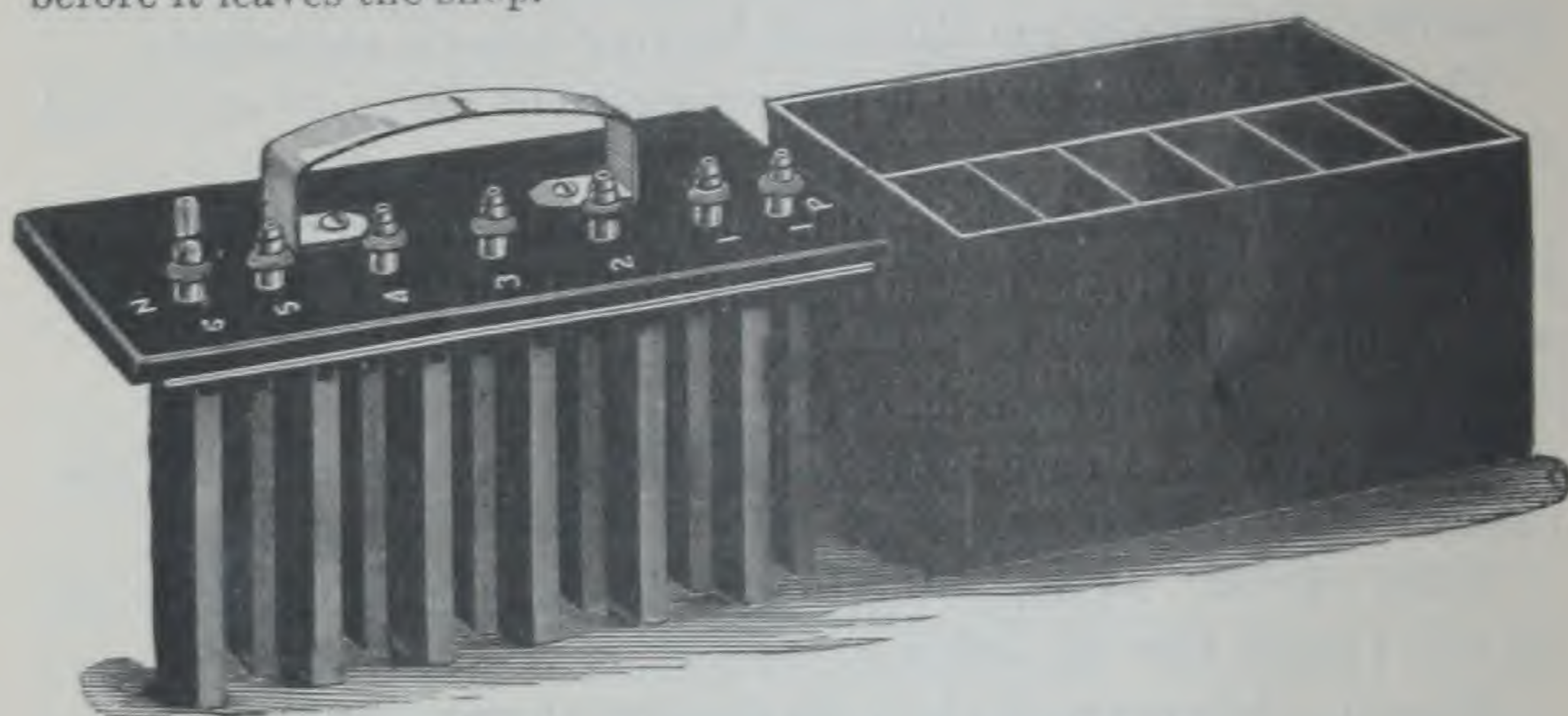


FIG. 1.

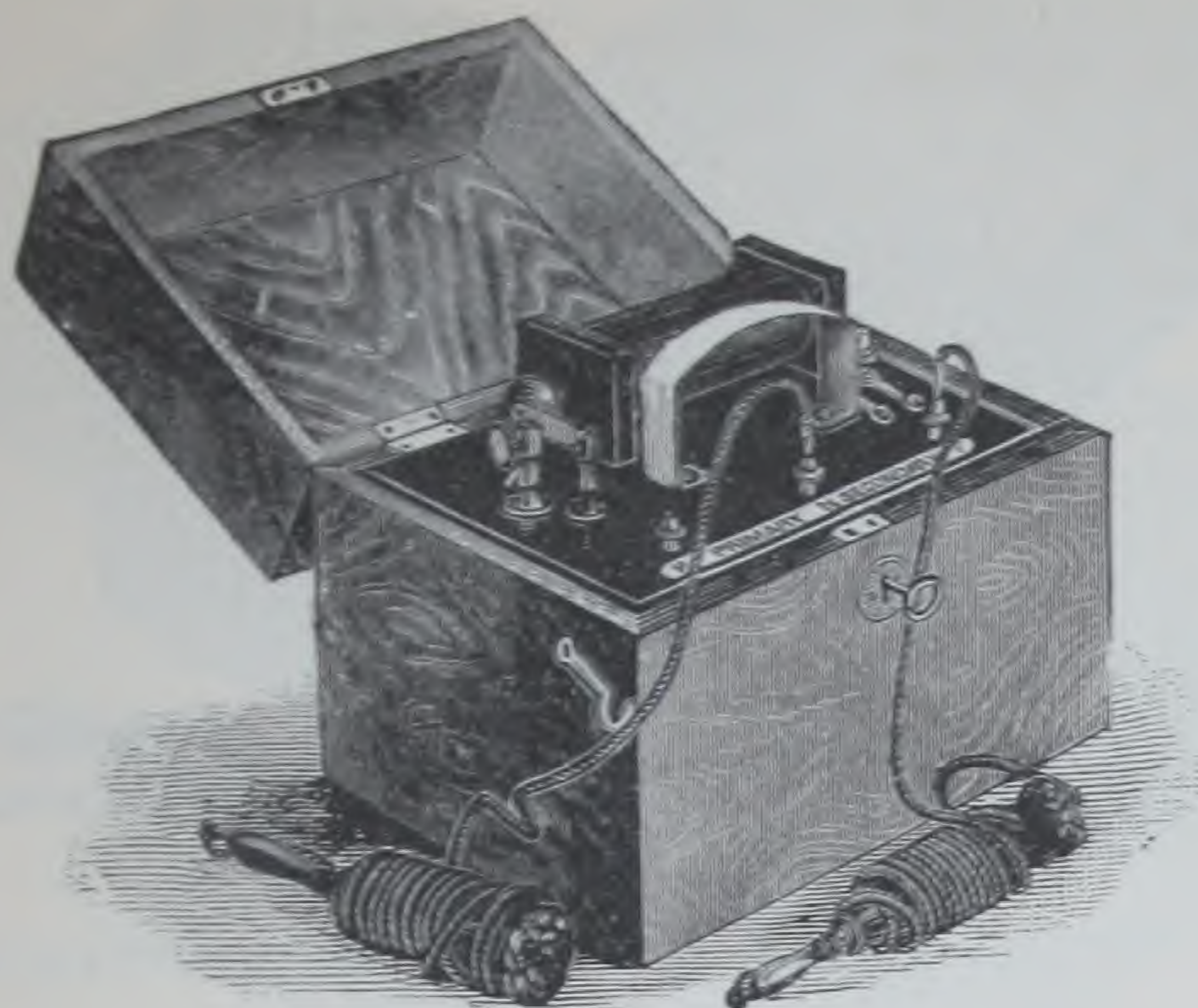
FIG. 2.

Fig. 1 shows the hard-rubber plate of a section (on the under surface of which is cemented a sheet of soft vulcanized rubber) and binding posts which project through the hard and soft rubber, and screw into the brass piece holding the zinc and carbon couples. The rubber plate on which the couples are clamped projects over on one side enough to cover the cells when the zinc and carbon plates are placed in the drip-cups. When the cells are not in use, and the lid of the Battery box is closed, it presses on the *spring handle* of the section (Fig. 1) and holds the soft rubber firmly over the cells and drip-cup. By this arrangement the hydrostat is made water-tight.

Fig. 2 shows a section of six cells and a drip-cup, made of one piece of hard vulcanized rubber. The drip-cup is to receive the zinc and carbon couples when not in use.

By the aid of a simple current selector any number of cells can be used. See cut.





### McINTOSH FAMILY FARADIC BATTERY.

There is a constant demand for a low priced Faradic Battery; not a mere toy, such as is offered to the public, but one made of good material, in a substantial manner, and that will give a smooth, even current, suitable for family use. This has induced us to make the above battery, which we believe will meet this want.

It is made on the same principle as our higher priced Faradic Batteries, and is portable. It is not intended to take the place of the Physician's Battery, but for domestic use.

It is put up in a neat black walnut case  $6\frac{1}{2}$  inches long, 6 inches high and 5 inches wide, with lock and handle, and furnished with electrodes and conducting cords; all the metal work is finely nickel plated.

No one can contradict us, when we say that no portable battery of the same quality is or has been sold at the low price we offer this one.

Price.....\$10 00.



These Batteries are so simple in construction that any person reading the directions will have no trouble to operate them.

The Faradic Battery weighs less than 8 pounds; the twelve-cell combined Galvanic and Faradic Battery less than 15 pounds, and the eighteen and twenty-four cell combined only 20 and 24 pounds each, and is perfectly portable, as it can be carried in the hand or a buggy any distance without spilling the liquid.

*We can furnish larger portable Batteries* up to thirty, thirty-six or forty-two cells. When so many cells are desired, we advise the party to order two Batteries—two eighteen-cell or an eighteen and twenty-four cell, as they would be more convenient to handle, and, if a case should ever require the use of so many cells, both Batteries could be connected and used as one. A Faradic coil could be furnished with one of the Batteries.

Parties can purchase the above number of cells in separate cases as cheap as in one large case.

The testimony of physicians who have used thirty-two and thirty-six cell Batteries can be summed up by giving in few words the experience of one of high standing and long experience:

"A Battery of thirty-two cells is almost useless as a visiting Battery, for it cannot be carried even a few blocks without great fatigue, and I would forego electric treatment rather than carry it even that distance. I seldom require a battery of more than twelve to eighteen cells. This size is the most convenient for a visiting Battery."

#### MEDICAL ELECTRICITY.

We often have inquiries from physicians for some practical treatise on Electricity. We have made arrangements to furnish a new work just published, entitled "*Elementary Principles of Electro-Therapeutics, for the use of Students and Physicians. Prepared by C. M. Haynes, M. D.*" Price in cloth, tinted paper, \$2. This is a book of 420 pages with 135 illustrations, especially adapted to the wants of students and those physicians who have recently begun the study of medical electricity. It treats briefly of the principles of **Magnetism, Franklinism, Faradism and Galvanism**; fully describes and illustrates the manner of applying them, and thoroughly sets forth the importance of the intelligent use of electricity according to one of three recognized methods, namely:

1. *Conveying electricity directly to the organ, nerve or muscle to be acted upon.*
2. *Influencing an organ or muscle through the nerve which supplies it.*
3. *Applying electricity to a distant part in such a way as to excite the reflex action of the nerves, and thus indirectly affect the part to be treated.*

The location of electrodes to produce these several results is so clearly described and illustrated that it is possible for those having very slight knowledge of anatomy to find the *motor points*, the *ganglia*, or correct position of the *various organs*, and apply electricity effectively instead of in the haphazard way commonly practiced, which is quite as likely to do harm as good, and which has done not a little to bring this valuable remedial agent into disrepute. Suggestions in regard to purchasing electrical apparatus are given, which will be found a reliable guide for those without practical acquaintance with the various kinds in the market. We commend this work as containing the latest information concerning the various applications of electricity to therapeutics and surgery in a condensed and well-arranged form. We will send it by mail postpaid on receipt of price.

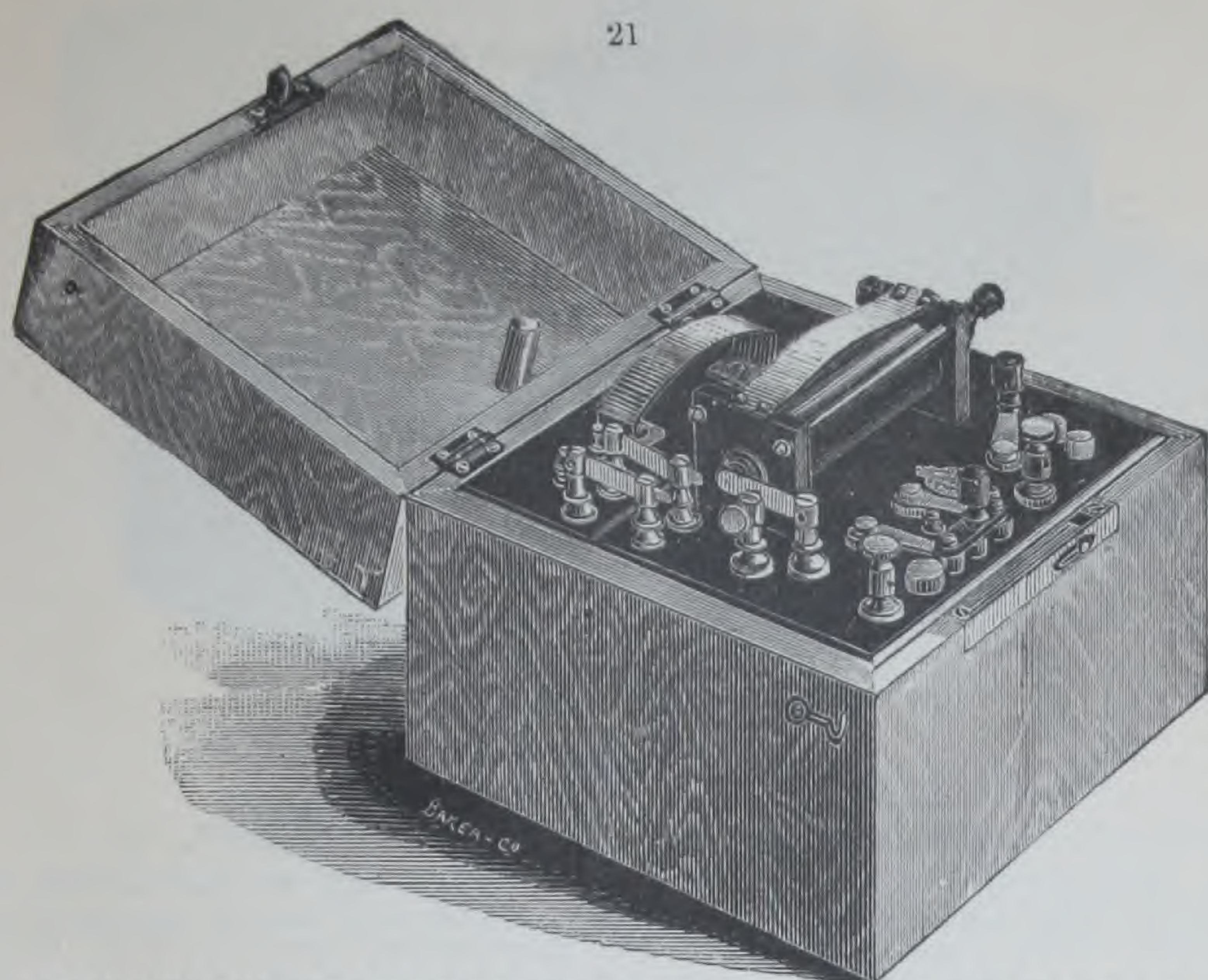
*For a more exhaustive treatise*, we recommend the valuable work by Beard & Rockwell, "**Medical and Surgical Electricity.**" This is a standard work of 758 pages, with nearly 200 illustrations. It gives the principles of electro-physics, the physiological action of electricity and its application.

The authors, who have had a long and successful experience with electricity as a remedial agent, give a large number of cases treated by them.

We will forward this work, prepaid, on receipt of publisher's prices. Cloth, \$5.50; or leather, \$6.50.

**Lectures on Electricity** (Dynamic and Franklinic) in its relation to Medicine and Surgery, by A. D. Rockwell, A. M., M. D. This is a neat volume of 122 pages, and contains much that is new and of interest to the physician. Price, \$1.25.





### McINTOSH PHYSICIAN'S FARADIC BATTERY, No. 3.

This instrument is intended for a physician's visiting battery. It is put up in a finely polished black walnut case, eight inches long, eight inches wide and six and a half inches high; all the metal work is finely nickel plated.

*It has several new features*, which we believe make it the most complete and elegant Faradic Battery ever offered to the profession. It has a large rubber cell and drip cup, composed of one piece of hard vulcanized rubber. It has a fine induction coil with polished hard-rubber spool and cover. The coil, rheotome, binding posts, pole changer indicator, and switch to connect primary or secondary current with the binding posts, are attached to a polished hard-rubber plate 5x7 inches. Under this plate is a space for electrodes. The pole changer is so arranged that when moved to the left it uncovers a button marked positive, on which is an index pointing to the positive post on the right. (Post on the left is now negative.) When turned to the right, a button on the left is uncovered and the index points to the positive post on the left. (Post on the right is now negative.) It is not necessary to remove the conducting cords when connected with the binding posts to obtain the *primary* or *secondary* current, as this is accomplished by means of a switch. The elements are securely clamped to a hard rubber plate, the under side of which is covered with a thick sheet of pure soft rubber. By simply closing the cover of the case, this plate is firmly pressed over the cell and drip cup, so that it is impossible for the fluid to be spilled. When the battery is to be used, open the box, raise and reverse the plate holding the elements, which immerse in the cell and connect the coil by means of the two bars, which should be pressed into the slots in the two posts opposite them. This makes a very simple, perfect connection.

The handle on the plate holding the elements serves the purpose of a spring, which gives firm and even pressure over the cell and drip cup when the case is closed.

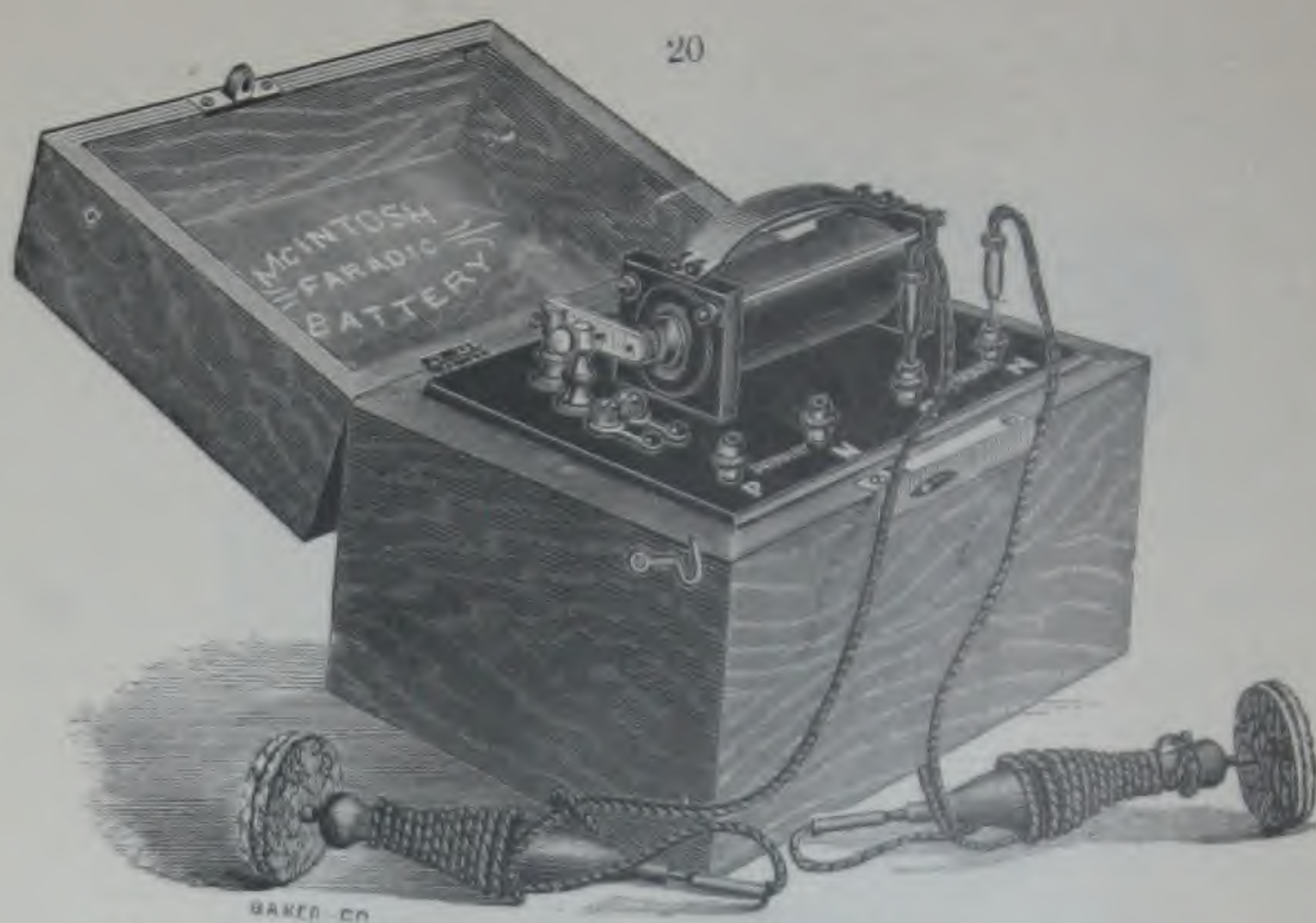
*Another new and very important improvement* in this battery is the perfect connections of the elements. The ends of the zinc and carbon plates which are fastened to the rubber plate are covered with hard rubber, which is put on in a soft state, then vulcanized. This covers them so perfectly that no fluid can get between them and the rubber, or the screws which clamp them.

*This is the only connection ever made* with zinc and carbon elements where the metal work and screws are perfectly protected from the battery fluid.

*This is the most convenient and elegantly finished battery ever offered for sale.* It gives a very smooth, even current, and of great strength. The force can be graduated, from a current so mild as to be scarcely perceptible, to one so strong as to be painful.

PRICE, with sponge electrodes and our cable conducting cord, \$30.00.





### MCINTOSH PHYSICIANS' FARADIC BATTERY.

This battery is put up in a neat polished black-walnut case, six inches in width, nine inches in length and seven inches in height, and weighs less than six pounds charged. All the metal work is nickel-plated.

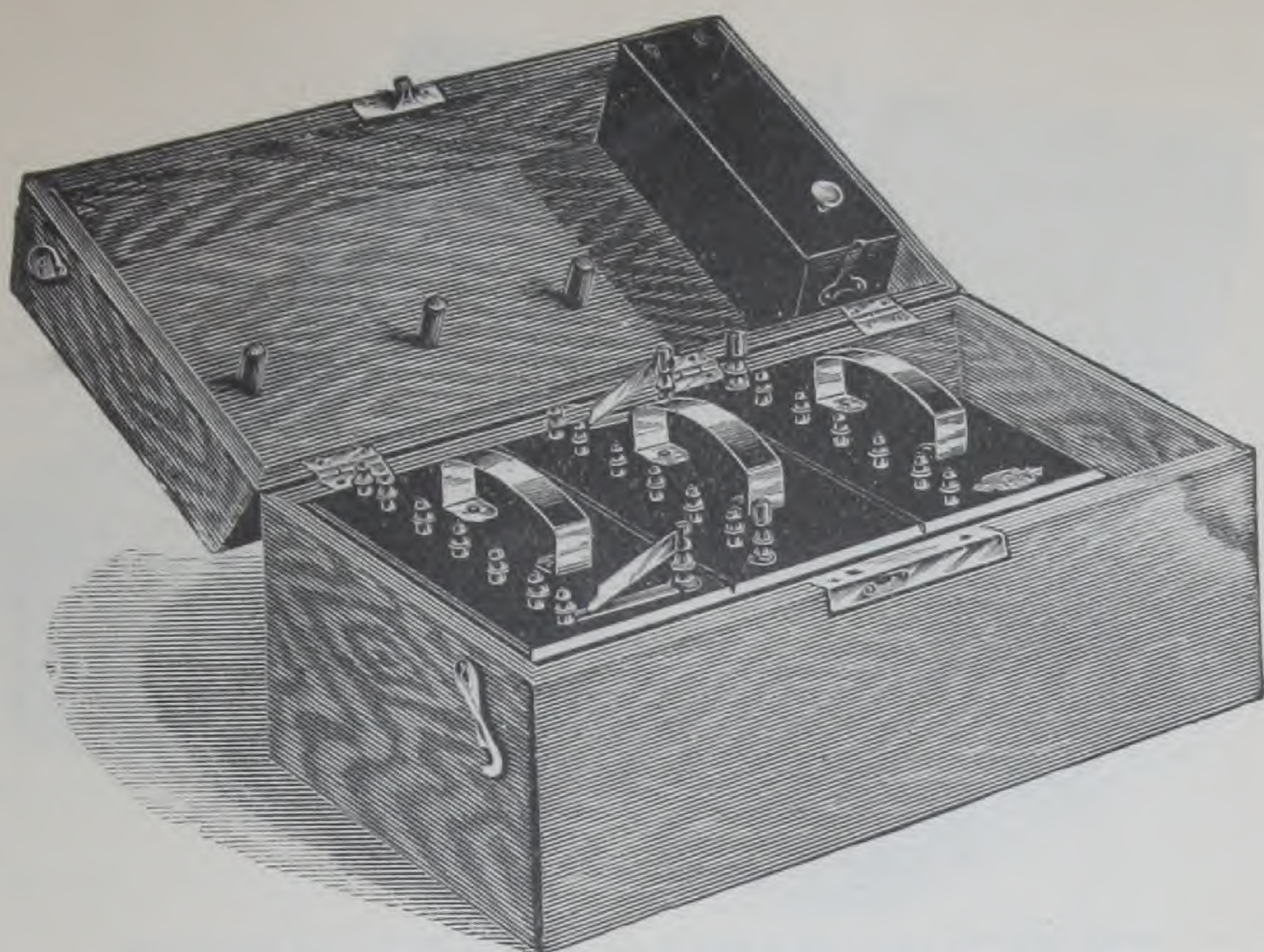
It has a hard-rubber cell and drip-cup. First-class induction coil, with polished hard rubber ends and cover. The coil, binding posts and rheotome are placed on the upper surface of a polished hard-rubber plate, the under surface of which is covered with soft rubber, and also holds the zinc and carbons. When the elements are removed from the cells and placed in the drip-cup, this plate is securely clamped over them, and makes them water-tight. The connections of the coil with the zinc and carbons are permanent.

To use this battery, it is only necessary to loosen the thumb-screws and raise the elements from the drip-cup and place in the cell, and the battery will commence to work at once; connect one end of the conducting cords with the binding posts, and the others with the sponge electrodes, and it is ready to use.

It is very convenient for a physician's visiting battery, or family use, as it is light and perfectly portable, and gives sufficient strength to treat any case where the Faradic or induced current is needed.

Price of battery with first-class sponge electrodes, and our new  
cable conducting cords.....\$18. 00

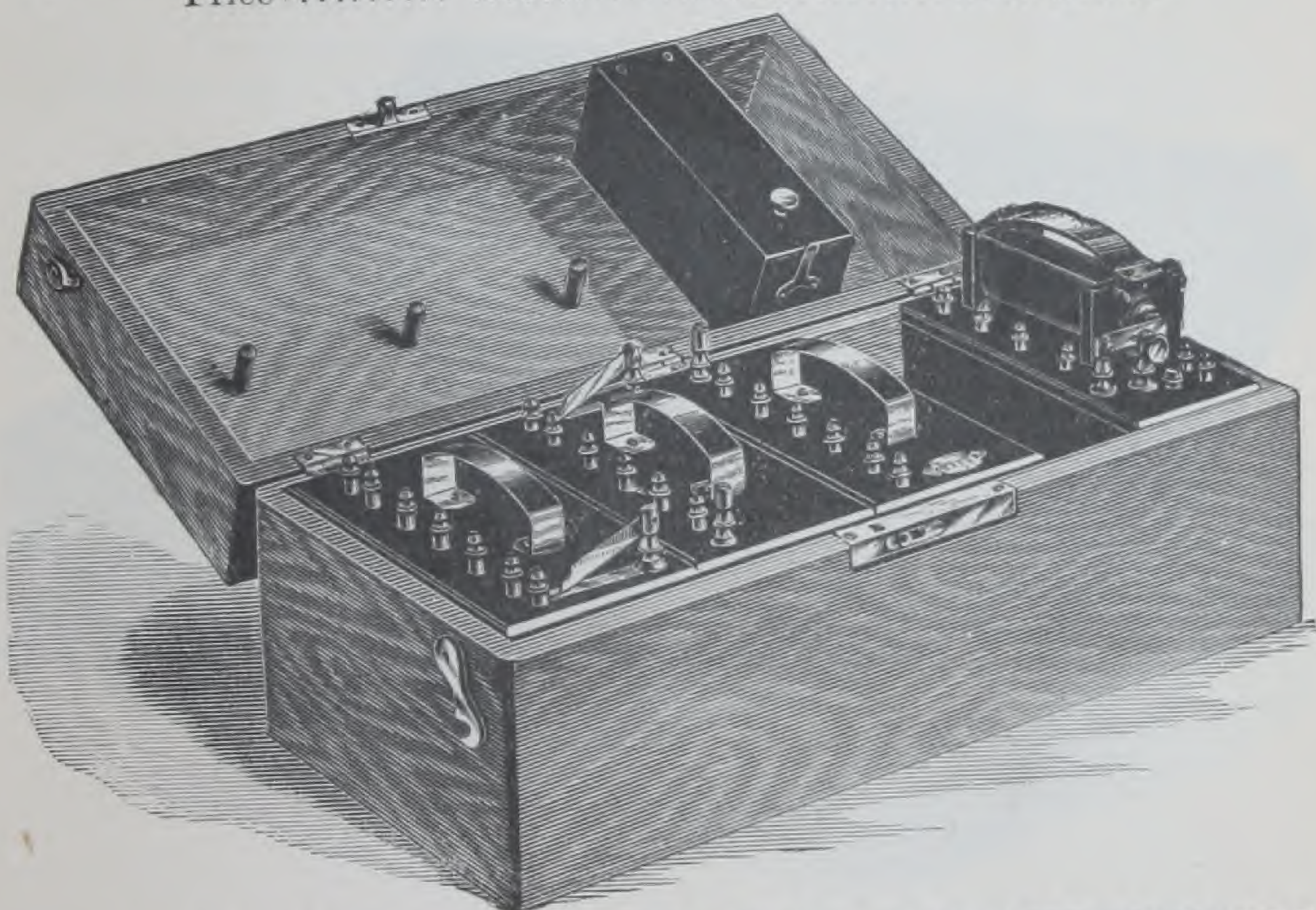




### EIGHTEEN-CELL GALVANIC BATTERY.

In a polished black-walnut case, 14 $\frac{1}{4}$  inches long, 8 $\frac{1}{4}$  inches wide, 7 $\frac{1}{4}$  inches high, with lock and handle, metal work all nickel-plated, first-class sponge electrodes, cable conducting cords, and hard-rubber electrode box. This is the most convenient size for a physician's use, as it gives a powerful current and weighs but a little over 15 pounds.

Price ..... \$40 00

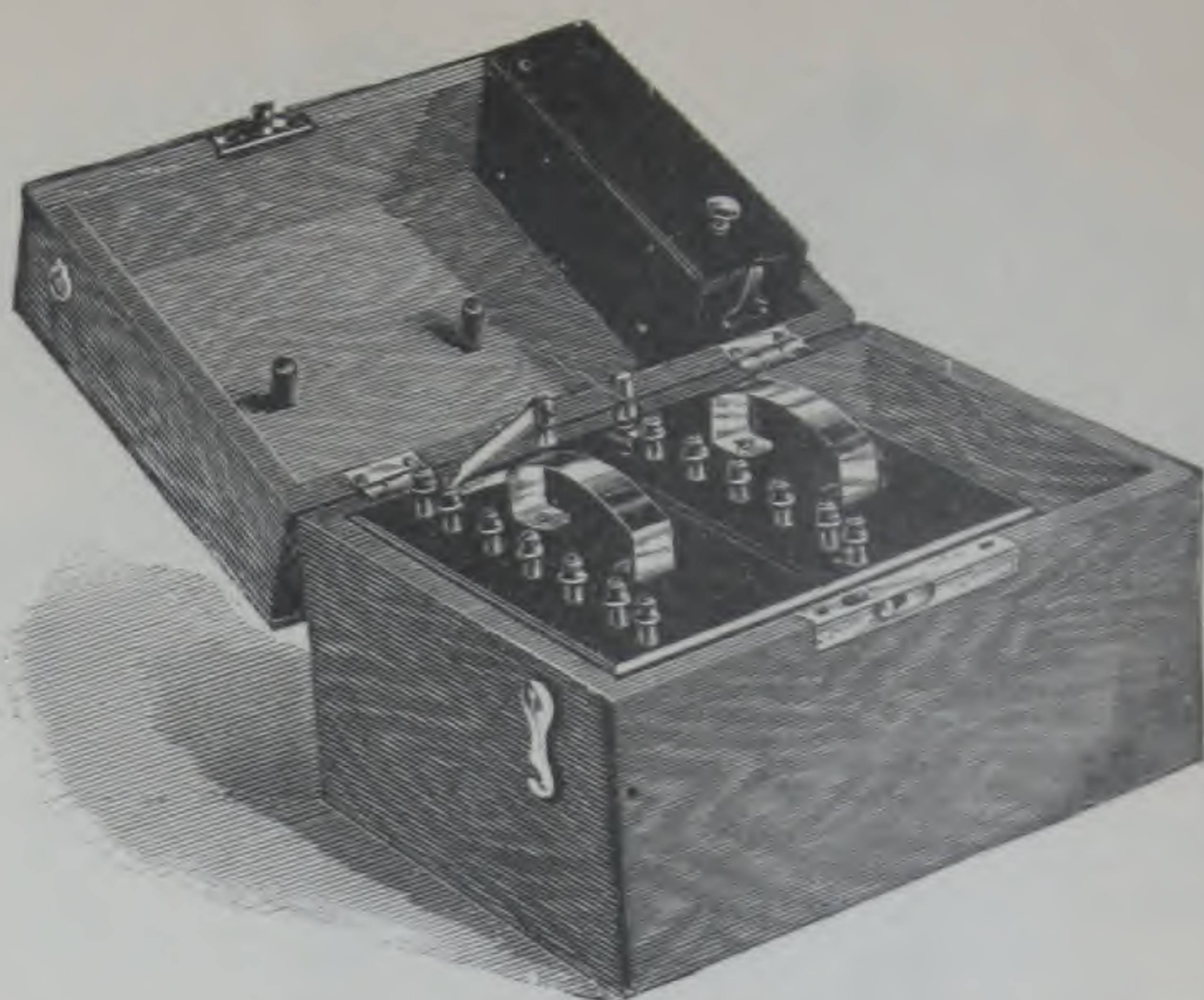


### EIGHTEEN-CELL COMBINED GALVANIC AND FARADIC BATTERY.

Same style of case and finish as the above, 17 inches long, 8 $\frac{1}{4}$  inches wide, 7 $\frac{1}{4}$  inches high, with first-class Faradic Coil, polished hard-rubber ends and cover, extra large cell to run the coil, sponge electrodes, cable conducting cords, and hard-rubber electrode box. This is the most convenient Battery for a physician's use, as it gives a very intense galvanic current and a Faradic current of sufficient strength to treat any case, and is perfectly portable.

Price ..... \$52 50

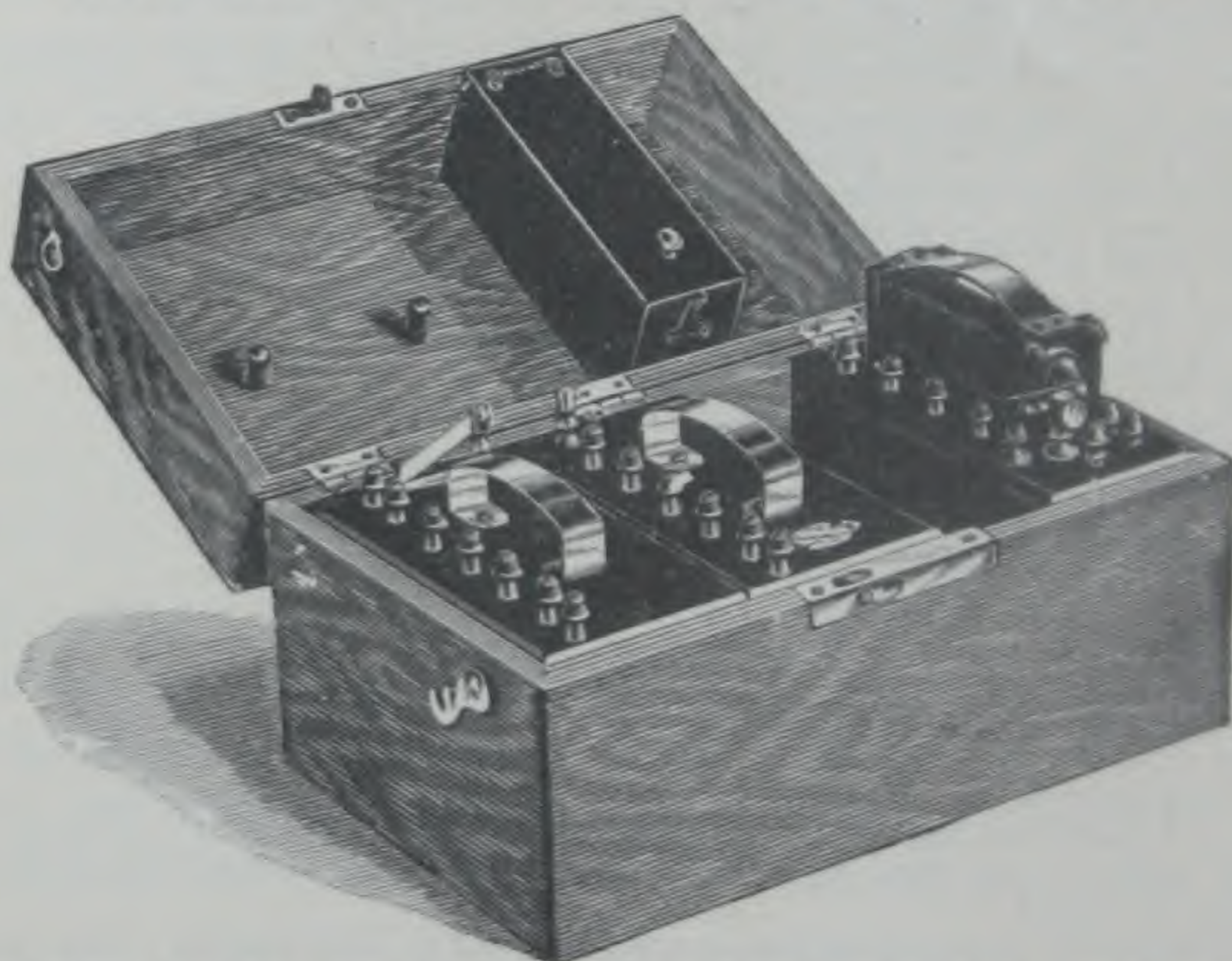




#### TWELVE-CELL GALVANIC BATTERY.

In a polished black-walnut case, 10½ inches long, 8½ inches wide, 7½ inches high, metal work all nickel plated, lock and handle sponge electrodes, cable conducting cords, and hard-rubber electrode box. This is a very convenient visiting Battery, as it weighs only eleven pounds, and gives a galvanic current of sufficient intensity to treat any case where it is indicated.

Price ..... \$30 00



#### TWELVE-CELL COMBINED GALVANIC AND FARADIC BATTERY.

Same style of case and finish as the above, 13½ inches long, 8½ inches wide, 7½ inches high, with first-class Faradic Coil, polished hard-rubber ends and cover, extra large cell to run the coil, electrodes, our new cable conducting cords and hard-rubber electrode box. This Battery gives a galvanic current same as above described, and a Faradic current of sufficient strength to treat any case.

Price ..... \$40 00

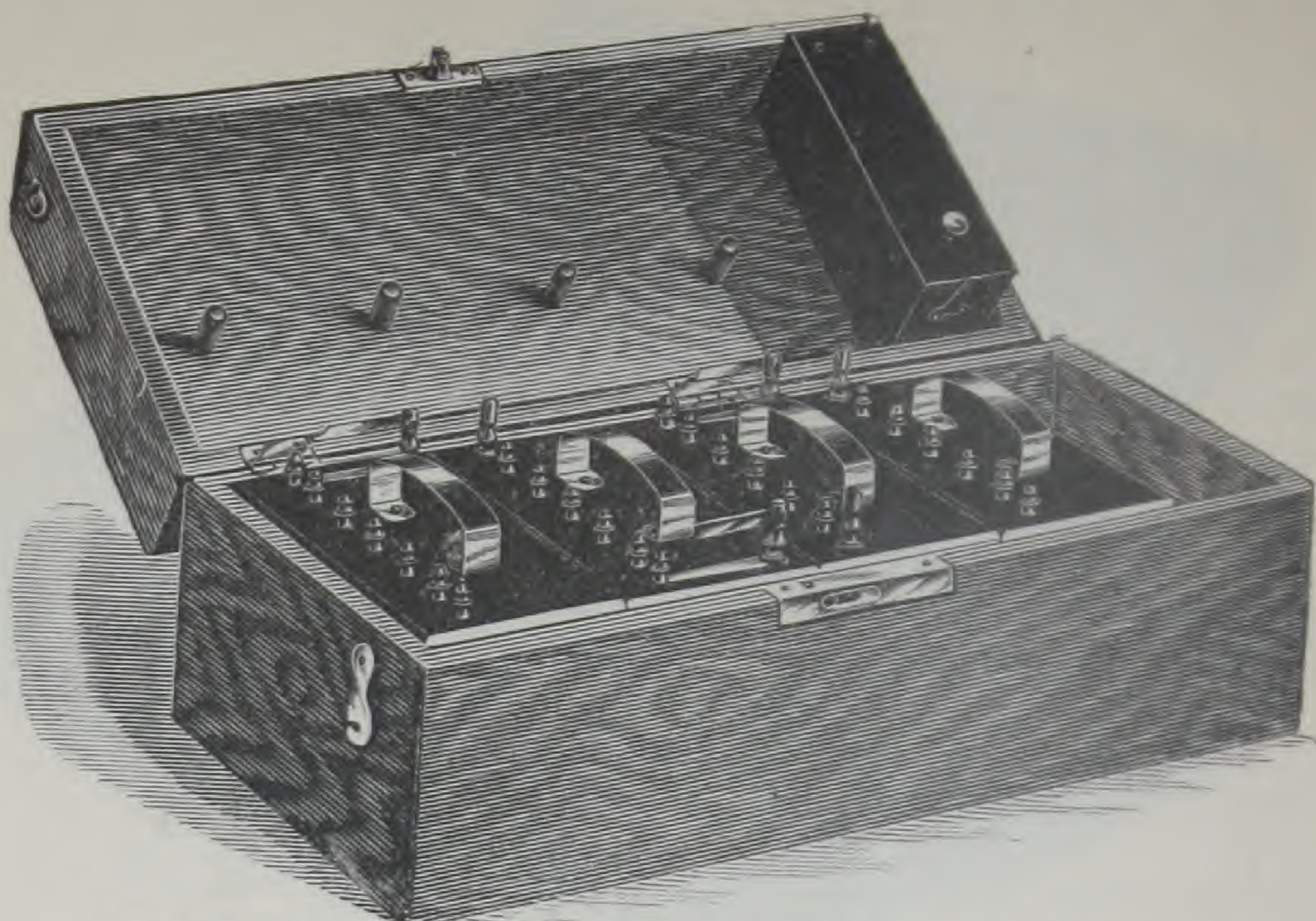


### PRICE OF EXTRAS.

For the convenience of customers who wish to purchase new elements for their batteries and to save them the trouble and expense of sending the instruments to us, which is often done unnecessarily, we quote the following prices, adding a few other articles which are required occasionally. Money must in all cases accompany the order, including the amount for postage:

Zinc for Family Faradic Battery.....	each, 20cts.	postage 4 cts extra.		
Carbon " " " " " " " " " "	20 " " " "	" " " "	2	"
Zinc for Physicians " " " " " " " " " "	25 " " " "	" " " "	7	"
Carbon " " " " " " " " " "	25 " " " "	" " " "	2	"
Zinc for Faradic part of Combined battery " " " " " " " " " "	25 " " " "	" " " "	7	"
Carbon " " " " " " " " " "	25 " " " "	" " " "	2	"
Zinc for Galvanic " " " " " " " " " "	15 " " " "	" " " "	4	"
" " " " " " " " " "	" per doz. 1.50	" " " "		
Carbons " " " " " " " " " "	each, 15 " " " "	" " " "	1	"
" " " " " " " " " "	" per doz. 1.50	" " " "		
Brass screws for fastening on zincs and carbons.....	per doz.	15 cents.		
Bridges for connecting zincs and carbons.....	each	10	"	
Binding posts.....	"	15	"	
Adjustable cord tips.....	"	15	"	
Rubber cell for Family Faradic Battery....	each, 1.50	postage 4cts extra.		
" " Physicians " " " " " " " " " "	2.50	" " " "	8	"
" " for Faradic part of Combined battery " " " " " " " " " "	2.50	" " " "	8	"
" " for Galvanic part of Combined battery " " " " " " " " " "	5.00	" " " "	12	"
Conducting cords with our new adjustable tip.....	per pair	75 cents.		
" " (1, bifurcated) " " " " " " " " " "	" " " "	" \$1.00		
" " for Family Faradic Battery.....	" " " "	50	"	
Metal handles " " " " " " " " " "	" " " "	75	"	
Handles and sponge discs.....	" " " "	\$1.50		
Sponge discs.....	" " " "	75	"	
Spiral connecting wires.....	each	15	"	
Bisulphate of mercury.....	per oz.	15	"	
Bichromate of potass.....	per lb.	50	"	



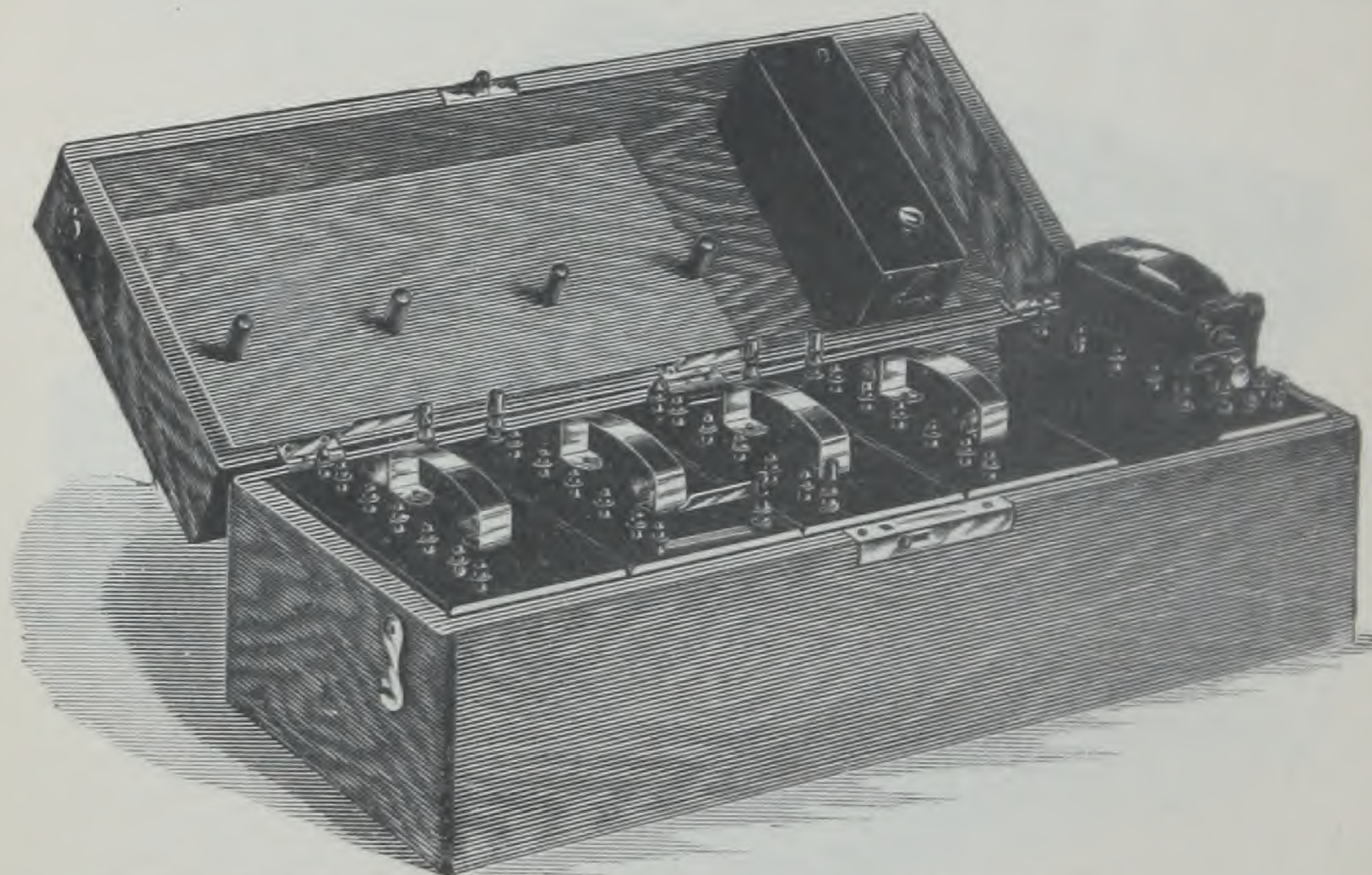


#### TWENTY-FOUR-CELL GALVANIC BATTERY.

Same style of case, finish, electrodes and cords as the eighteen-cell battery. Case is 18 inches long,  $8\frac{1}{2}$  inches wide, and  $7\frac{1}{2}$  inches high, with lock and handle and hard-rubber electrode case; weighs less than 20 pounds.

This battery gives a galvanic current of great intensity, sufficient to treat any case where it is indicated.

Price..... \$55 00



#### TWENTY-FOUR-CELL COMBINED GALVANIC AND FARADIC BATTERY.

Same style of case and finish as the above,  $20\frac{1}{2}$  inches long,  $8\frac{1}{2}$  inches wide,  $7\frac{1}{2}$  inches high, with first-class Faradic Coil, polished hard-rubber ends and cover, extra large cell to run the coil, sponge electrodes, cable conducting cords, and hard-rubber electrode box.

This battery gives same intensity of galvanic current as the above, and a Faradic current of sufficient strength to treat any case. It weighs only 24 pounds, and is perfectly portable.

Price..... \$67 50



Before attempting to charge and use a Battery, please read these directions carefully and notice by the aid of this diagram and your battery just how to *make the fluid, fill the cells, connect and work*, as parties after purchasing a battery sometimes write us asking questions which these directions would answer. We do not make this request to save ourselves trouble, for we are always pleased to answer any questions in regard to our batteries, but to save time and much perplexity to the owner.

To make the Battery fluid: R—Sulphuric acid (commercial), 3 fluid oz.; Powd. Bichromate of potass., 2 oz.; Water, 16 fluid oz.; Bisulphate of mercury, 2 drachms. Dissolve the Bisulphate of mercury in the water; then add the Bichromate of potass. When dissolved, pour in the sulphuric acid and allow the liquid to cool, as the mingling of the acid and water produces heat, and if the mixture is used when warm it injures the battery.

The bisulphate of mercury keeps the zincs well amalgamated.

To fill the Galvanic Cells, remove the sections with the aid of the spring handles marked 1, 2, 3, 4; fill each cell a little more than half full (or to fill equally use the small glass measure accompanying the battery).

Fig. 1 shows the combined Galvanic and Faradic Cells in correct position. After filling or cleaning the cells they should always be placed as shown in this cut.

Fig. 2 shows the Galvanic sections of 24 cells connected for use. Each section is marked respectively on the spring handles 1, 2, 3, 4.

To use six Galvanic Cells, lift Section 1 and remove the elements from the drip cup; carry forward and place them in the galvanic cells; then connect one conducting cord with P 1 and the other with N 6 (all parts marked P are positive and N negative.)

To use 12 cells, lift Section 2 from the drip cup, move it forward near Section 1, and place the elements in the galvanic cells; connect N 6 with P 7 by means of the horizontal bar and the conducting cords, one with P 1 and the other with N 12.

To connect 18 cells, lift Section 3 from the drip-cup, carry forward and place the elements in the galvanic cells, then connect N—12 with P—13, and the conducting cords, one with P—1, the other with N—18.

To connect 24 cells, lift Section 4 from the drip-cup and place the elements in the galvanic cells, then connect N—18 with P—19, by means of the horizontal bar and the conducting cords, one with P—1, the other with N—24.

To use a less number of cells, remove the cord from N—24, and place it in a post opposite the number to be used.

From O to Section 2 shows a 12-cell Combined Battery.

From O to Section 3 shows an 18-cell Combined Battery.

From O to Section 4 shows a 24-cell Combined Battery.

How to Detect the Galvanic Current.—Put one sponge, well wet, in the palm of the hand, and let the other be held between the thumb and the first finger of the same hand. A slight pricking sensation will be experienced. Those only accustomed to the induced or faradic current will be disappointed to find the galvanic current causes only a slight pricking or burning sensation, or perhaps a slight dizziness when applied to the head. A galvanic current that can scarcely be felt in the hand may be too strong to apply to the head or neck.

The bifurcated or forked cord is for the purpose of preventing a shock while changing to a less or greater number of cells while using the galvanic current. For example: Suppose you are using seven cells. One of the bifurcated ends would be connected with cell No. 7, and the other end hanging loose. If you wish to use, say twelve cells, take up the loose end of the bifurcated cord and connect it with No. 12, and pull the other end out from No. 7. Thus all shock is avoided in the change.

To use the Faradic section of the Battery holding the coil, lift the section marked O from the cell and drip-cup, fill the large cell half full of battery fluid, reverse the section and place the elements in the large



DIRECTIONS  
FOR OPERATING THE  
McINTOSH COMBINED  
Galvanic and Faradic Batteries.

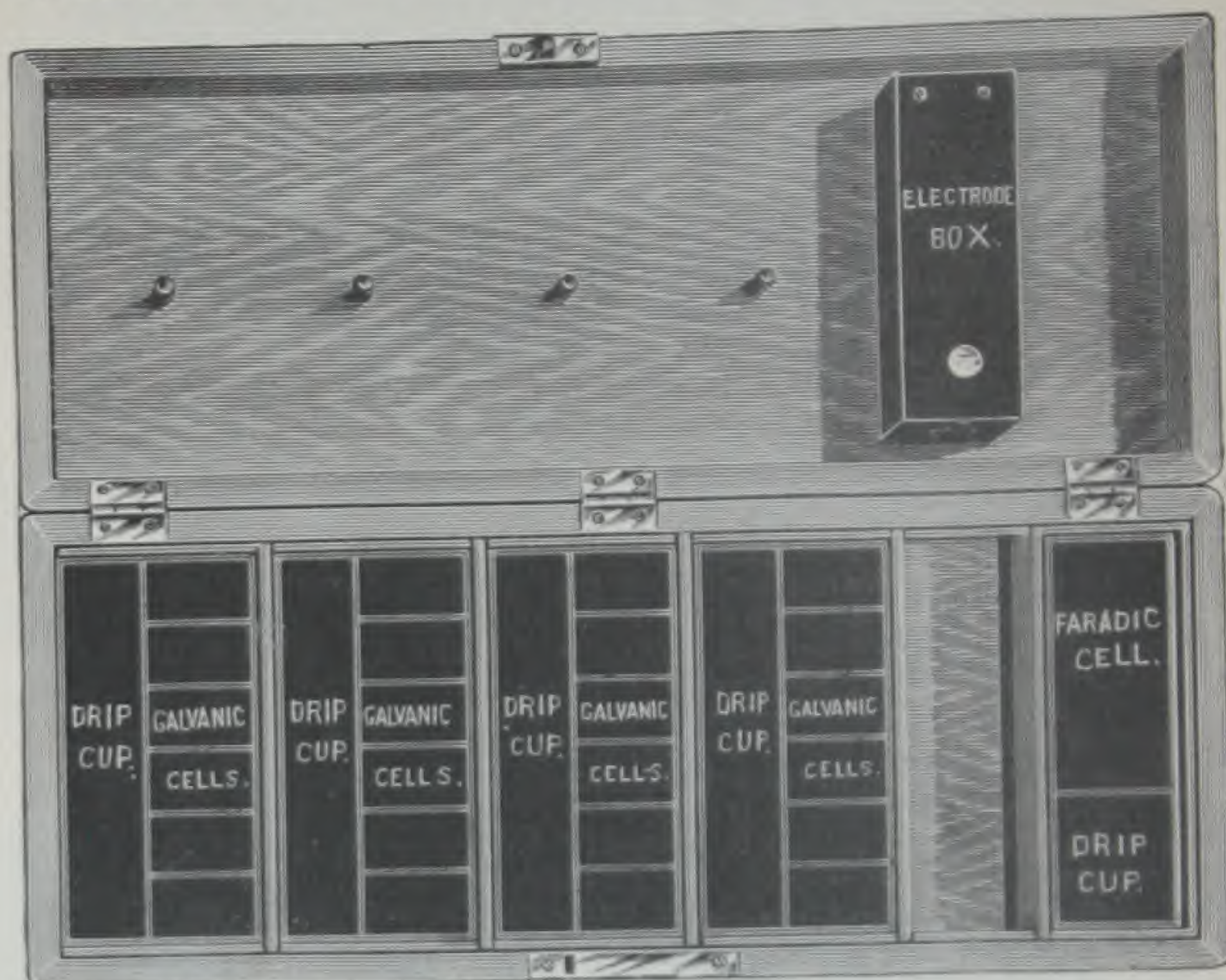


FIG. 1.

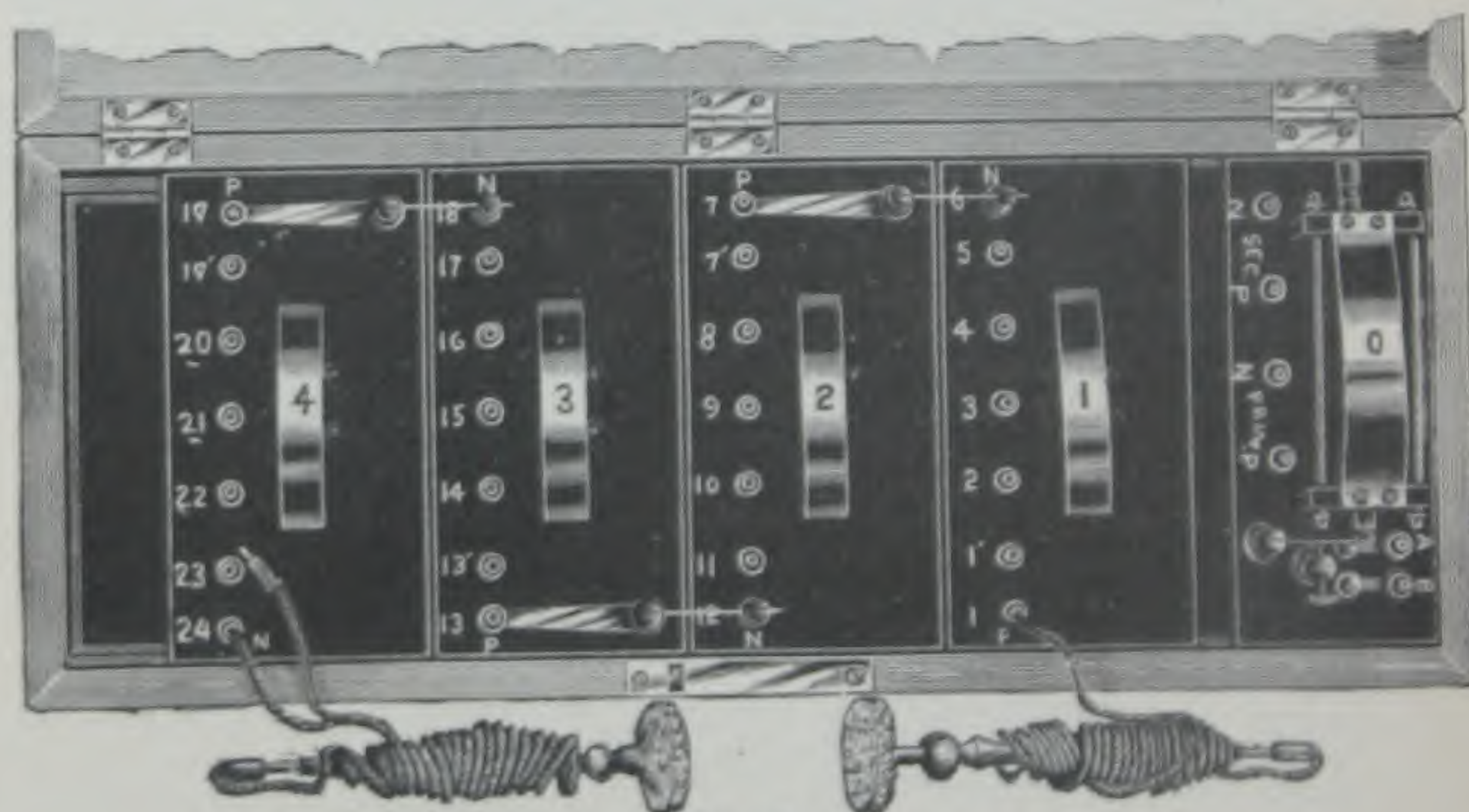


FIG. 2.



WE CALL PARTICULAR ATTENTION TO OUR CABLE CONDUCTING CORD AND NEW ADJUSTABLE TIP.



This cable-cord is made with spiral copper wires, each surrounding a strong thread; and these are twisted in an insulated bundle. The Adjustable Tip will save the physician much trouble, as he can easily remove it from a broken cord and replace it in a few moments. The above cut will help to explain it. To repair a cord, unscrew the tube B from the tip C, draw the cord through, cut away the broken end, slip back the covering, knot the wires and screw the tube into the tip. This clamps the wires in the tip as seen in A, and makes a perfect connection. This feature alone recommends our Battery to the profession.



ELECTRO MAGNET.

This instrument is for removing bits of iron or steel from the cornea and chambers of the eye. Every Surgeon and Oculist knows from experience how difficult it is to remove particles of iron or steel filings and turnings from the cornea, even after they have been loosened, and the impossibility of extracting them from the posterior chamber of an eye with ordinary instruments. With the aid of this instrument these operations are easy and simple. To use the magnet the conducting cords are connected with the poles of a battery cell (a cell with zinc-carbon element is the best), and the small stylet brought near or in contact with the particle, which adheres to the magnet and is removed. If the particle of iron is imbedded in the cornea, it may be necessary to loosen it and then remove it with the magnet, which can be done without contact with the eye. If iron or steel has penetrated either chamber, it is then necessary to introduce the small stylet of the magnet, which attracts the particle, which is easily removed. The connections are made so that it can be connected to the cell of any Faradic Battery, but its magnetic force is greatly increased by adding several cells. This is the more easily done with our combined battery, as one or more cells can be connected at pleasure.

When connected with one of our cells the magnet will lift 300 grains; by adding 6 cells, 720 grains. The instrument is shown full size in the cut. It is furnished with long and short stylet and conducting cords.

PRICE, without cell. . . . . \$10.00.  
PRICE, with No. 2 Grenet cell. . . . . 15.00.



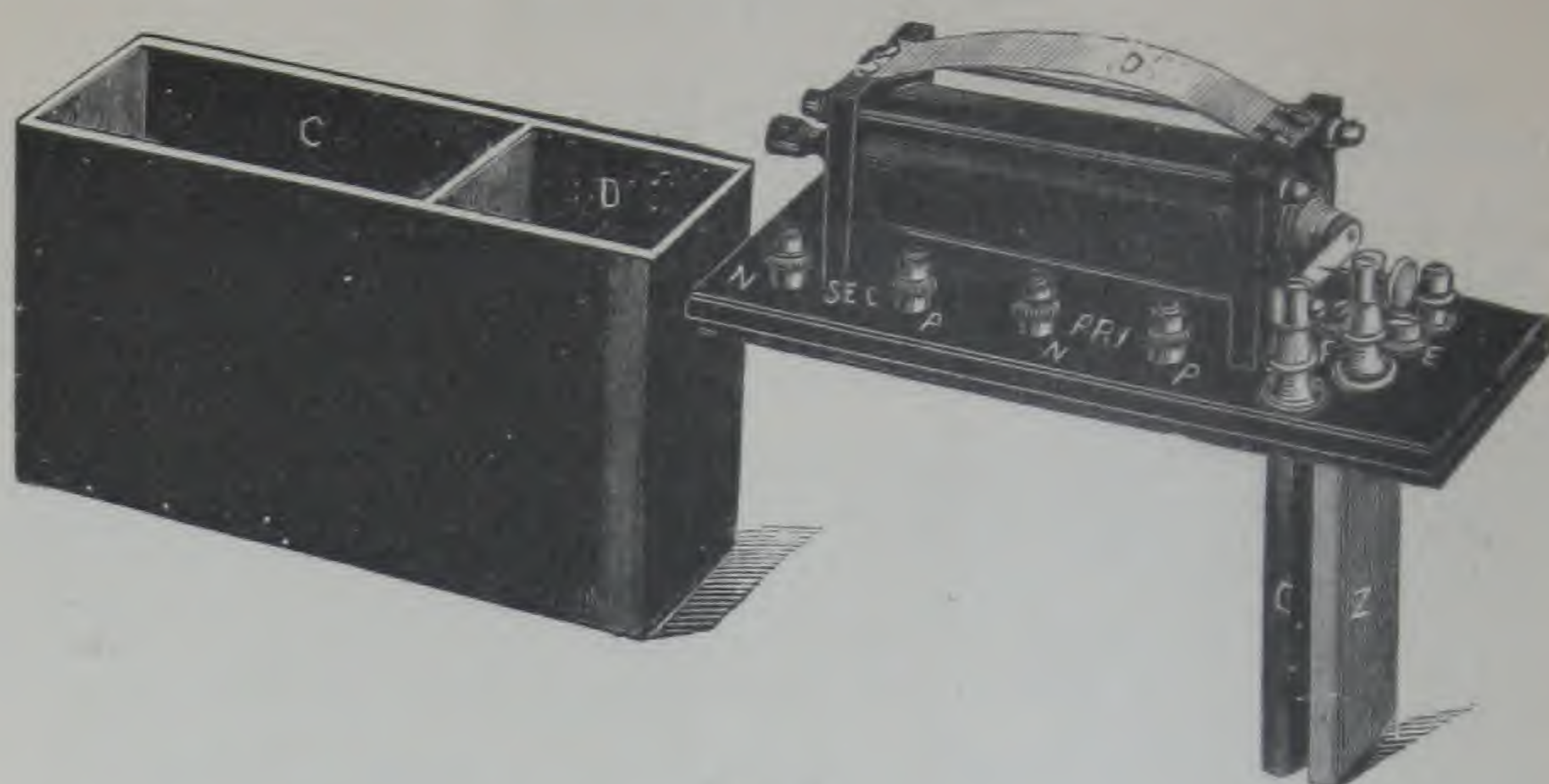


FIG. 3.

cell C and the Battery will commence to work at once, which may be known by the buzzing of the rheotome. To obtain the primary current, insert the tips of the conducting cord in posts P and N, on either side of "prim." To obtain the secondary current, insert the cord tips in posts N and P on either side of "Sec." Either current can be made stronger by drawing out the shield in the coil.

To connect the coil with one or more Galvanic cells: In a case of emergency, like an attempt to resuscitate a person from drowning, where greater intensity is needed than one cell will give, the coil can be connected with the galvanic cells of Section 1 by means of the long spiral wires, as follows: Reverse the coil section, immerse the elements of Section 1 and connect post A near the coil with post P 1 on Section 1, and Post B on coil with Post 2, 3, 4, 5 or 6, on Section 1.

#### DIRECTIONS FOR OPERATING

### THE McINTOSH FARADIC BATTERY.

To make the Battery fluid: R—Sulphuric acid (commercial), 3 fluid oz.; Powd. Bichromate of potass., 2 oz.; Water, 16 fluid oz.; Bisulphate of Mercury 2 drachms. Dissolve the Bisulphate of Mercury in the water; then add the Bichromate of potass. When dissolved, pour in the sulphuric acid and allow the liquid to cool, as the mingling of the acid and water produces heat, and if the mixture is used when warm it injures the battery.

The bisulphate of mercury keeps the zincs well amalgamated.

To charge the battery: Remove the rubber plate which holds the coil and elements from the cell and drip-cup, and fill the large cell one-half full of the battery fluid. When the battery is to be used, immerse the zinc and carbon plates in this cell, and the battery will commence to work at once; if it does not, touch the spring on the coil and set it vibrating. A buzzing sound is produced, which shows that it is in action. The screw-heads on each side of primary give the mild current. The screw-heads on each side of secondary give the stronger current. Either of the currents can be made stronger by drawing out the tube from the coil.

To use the Faradic current: Connect the conducting cords with either the primary or secondary current, and hold the sponge electrodes, or place on any part of the body to be treated. The sponges should be thoroughly wet, or the current will not pass. When through using the battery, remove the zinc and carbon plates from the fluid and place in drip-cup, and close the box, the cover of which presses on the spring and holds the soft rubber on the under side of the hard-rubber plate evenly over the cell and drip-cup.

In no instance should the elements be left in the fluid. After using the battery a few times, rinse the zinc and carbon plates; this keeps them clean. After using for some time, the battery fluid should be changed, as it grows weak, and the battery will not act.



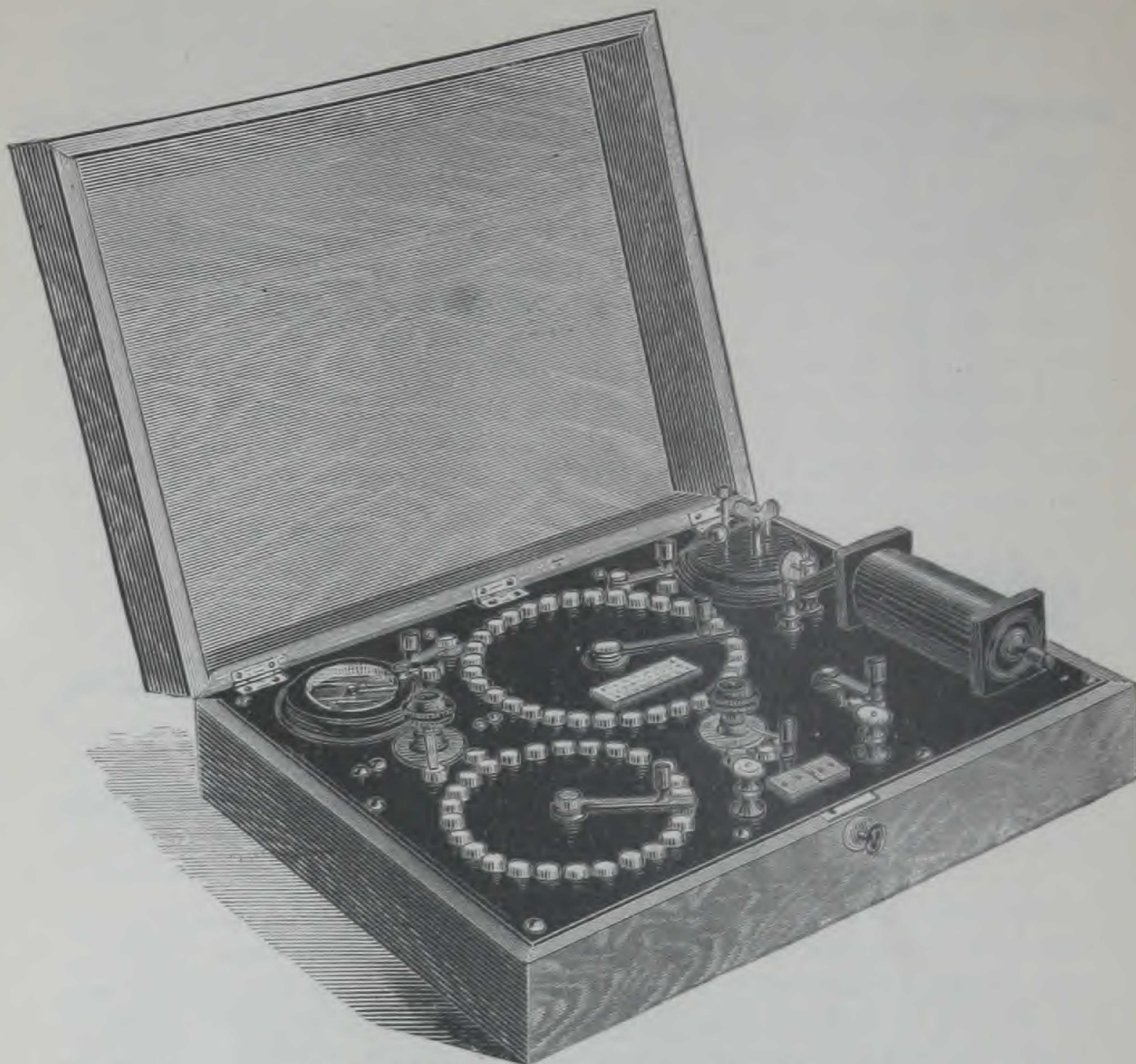


### OFFICE BATTERY IN CABINET CASE.

This engraving represents our Office Battery (described on page 26), in a finely finished black walnut cylinder cabinet case. The battery cells are placed in the base of the cabinet. The table plate can be kept from exposure and dust by closing the cylinder cabinet cover. Below the table plate is a drawer for instruments, electrodes, etc. Above the cylinder cover is a book-case with three movable shelves that can be used for office instruments, books, etc. The front has a large glass door. The base of this case occupies a space 19x34 inches; it is furnished with 36 gravity cells. We believe this to be the most convenient, economical and finest finished Cabinet Battery ever offered to the profession.

Price, complete with cells.....\$225.00





### McINTOSH TABLE BATTERY.

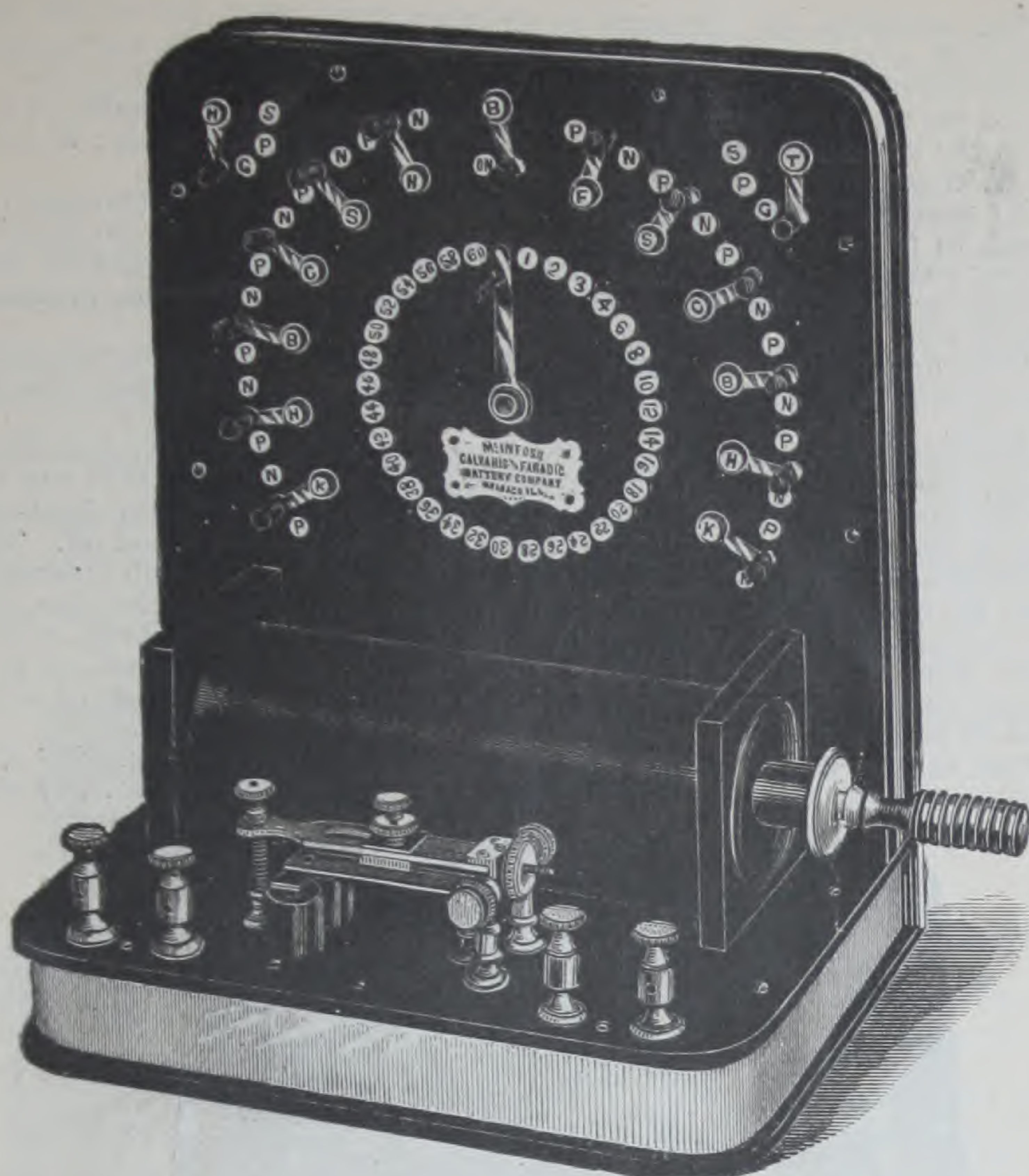
This was designed by Dr. McIntosh to meet the want of physicians who desire a compact and complete *office battery*. This arrangement is a beautiful piece of work. The following accessories, finely nickel-plated, are tastefully arranged on a board of polished hard rubber, 12x16 inches: *A Galvanic Switch for thirty-two to sixty cells; an Automatic Rheotome, giving fast or slow interruptions; Galvanometer; Pole Changer; Current Indicator; Binding Posts; large Faradic Coil, with polished hard-rubber ends and cover; a Coil Rheostat of twenty-five coils of one hundred ohms' resistance each, whereby from one hundred to two thousand five hundred ohms' resistance can be brought into either the Galvanic or Faradic circuit, by simply moving the circular switch.* This can be furnished in black-walnut case, on an office table or cabinet case. This is a very perfect and elegant piece of work, and receives the approval of physicians at sight.

Each instrument is furnished with a thirty-two-cell Gravity Battery and connections. This battery can be placed in a closet or cellar, out of the way, as it requires very little attention.

Price, as above described, in polished black-walnut case, with gravity battery. . . . . \$150 00

Any kind of battery cell furnished with the cost of the change added to the above price.





### McINTOSH COMBINED GALVANIC AND FARADIC BATH APPARATUS, No. 1.

Our Faradic Bath Apparatus is very complete in its arrangement. The Faradic coil is nearly twelve inches long and three and one-half inches in diameter (with polished hard-rubber ends and cover), placed on the shelf of a polished hard-rubber bracket. The vibrator, magnet and binding posts are placed on the shelf in front of the coil. Twelve switches are placed on the perpendicular plate of the bracket in circular form. Each switch has a positive and negative connection with its electrode in the bath tub. By this arrangement, they can be used as pole changers. Within the *electrode switch* is a *galvanic switch* with buttons to connect with galvanic cells from 1 to 60. The switches in the upper right and left hand corners connect either current with the electrode switches to the tub or the binding posts. The upper central switch connects the coil with the large gravity cell.

This apparatus can be placed on a table or the wall in convenient proximity to the bath tub, and is the most convenient arrangement ever designed. It is very ornamental. The coil, with polished hard-rubber ends and cover, produces a fine contrast with the nickel-plated metal of the vibrator, binding posts and switches. The primary and secondary wires in the coil are proportioned in length and size, so as to produce a quantity current very powerful in its character. It penetrates the innermost tissues of the body, and is free from the sharp, stinging character to be met with in many kinds of bath apparatus, having coils of great intensity without regard to quantity. The position of the vibrator and binding posts in front of the coil and switches just above it, are very convenient to the hand of the operator. The shield is nickel plated and graduated. The current increases in strength as it is withdrawn from the coil, and, by its intelligent use, any strength of current can be obtained, from one scarcely perceptible, to one so powerful that the strongest person can with difficulty endure it.





**THIS SHOWS THE TABLE BATTERY DESCRIBED,**

on page 26, set in a neat polished black-walnut table, with cover and drawer for electrodes and instruments. This gives it an elegant appearance, as the table is in proportion with the battery. The connections of the table-plate with the battery are made by means of a bundle of insulated wires entering the underside back of the drawer.

Price, with thirty-two cells.....\$165 00



### McINTOSH CABINET ELECTRIC BATH.

The Cabinet Bath is devised for the application of hot air or vapor with any form of electrization. By its use the physician can avail himself, at a trifling expense, of all the remedial advantages to be obtained in the most expensive bath establishment.

This apparatus is simple, neat and convenient, occupies little space, and can be used in an office where it is not possible to furnish the conveniences for the water bath. It is not necessary that a dressing-room be provided, and only a small amount of water is required.



It is shown in cut with the cover raised and the front removed.

BB. Folding and sliding cover.

S. Depression for holding switch-board and electrodes.

E. Revolving stool.

Z. Zinc, lining the bottom of the cabinet.

OO. Openings through which the operator can manipulate the electrodes.

LL. Flexible electrode connections, to which spring electrodes are attached, which can be applied to any part of the body.

G. Wire which connects the switch-board with the zinc, when the latter is required for a foot-plate.

F. Wire connecting switch-board with stool.

C. Steam coil.

N. The pipe where steam enters the coil.

V. Valve to admit steam or vapor into the cabinet.

D. Drain pipe.

T. Marks the location of the thermometer, which fits in a groove in the box, permitting the temperature to be observed without opening the bath.

A. The opening for the patient's neck.

Length, 3½ feet. Width, 2¼ feet. Height, 4 feet.

It is heated by a small coil supplied with steam from a tin or copper vessel, which is heated by a coal oil or gasoline stove, or ordinary stove outside the bath. Connection is made with the boiler and coil by means of rubber tubing. There is no danger of explosion, as the coil opens outside at the lower end to permit escape of condensed steam. To use dry heat it takes from fifteen to twenty-five minutes to raise the temperature to 130°. If steam is allowed to enter the box, only five to ten minutes are required to raise the temperature from 90° to 110°. (A higher temperature with steam should not be used.)

Any of our portable or office batteries can be used to supply electricity. Price as above described, \$90.00, without battery.



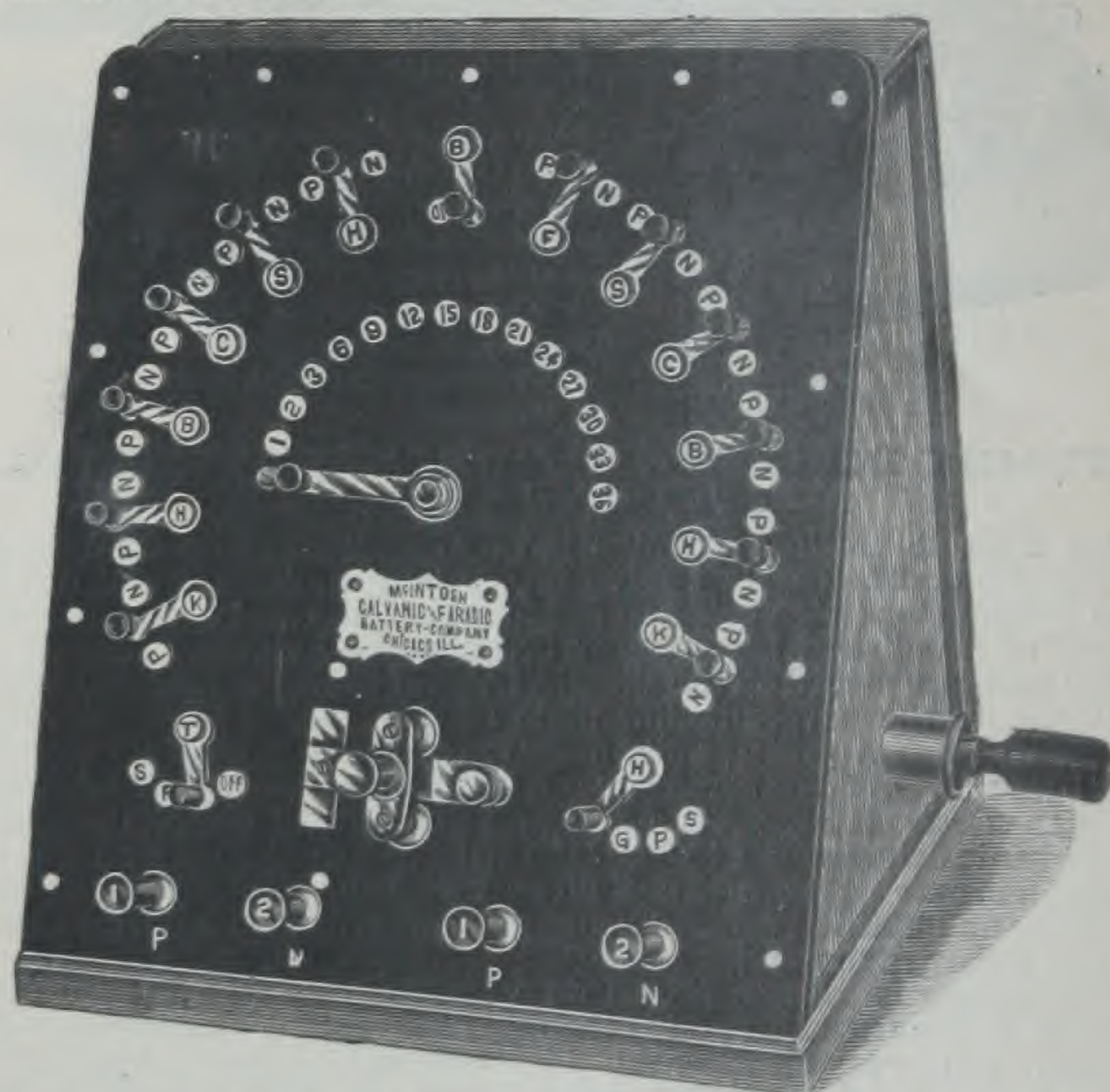
The switches are arranged in circular form. The one at the top marked H, connects with the head electrode in the tub. The one marked F, with the foot electrode. Those on the right side, with the electrodes in the tub on the right side. Those on the left, with the electrodes in the tub on the left side, as follows: C, chest; S, stomach; B, bowels; H, hips, and K, knees.

By means of these switches, the current can be directed through the patient in any direction, and its polarity changed at will in an instant. The dry current can be taken from the binding posts by means of conducting cords and handles, and applied the same as from an ordinary Faradic coil.

This apparatus is furnished with 36 or more 5x7 gravity cells, the current from which can be directed through the bath electrodes or binding posts.

We furnish with each apparatus a large, powerful gravity-cell 18x18 inches, and 8 inches deep, to run the Faradic coil. This cell will run for months with very little attention. The elements remain in the fluid and there is no action on them when the battery switch is turned off. The tub electrodes are highly finished and nickel-plated. The tub is usually made six feet four inches long, four feet six inches on the bottom, sixteen inches wide at the foot, and twenty-one inches at the head, with a slight taper toward the bottom. It is usually made of wood, as it is cheaper and just as good. If desired, we can furnish tubs made of soap-stone or porcelain.

Price, complete as above described, with 36 5x7 gravity cells..\$250 00  
Price, without galvanic attachment and gravity cells..... 200 00

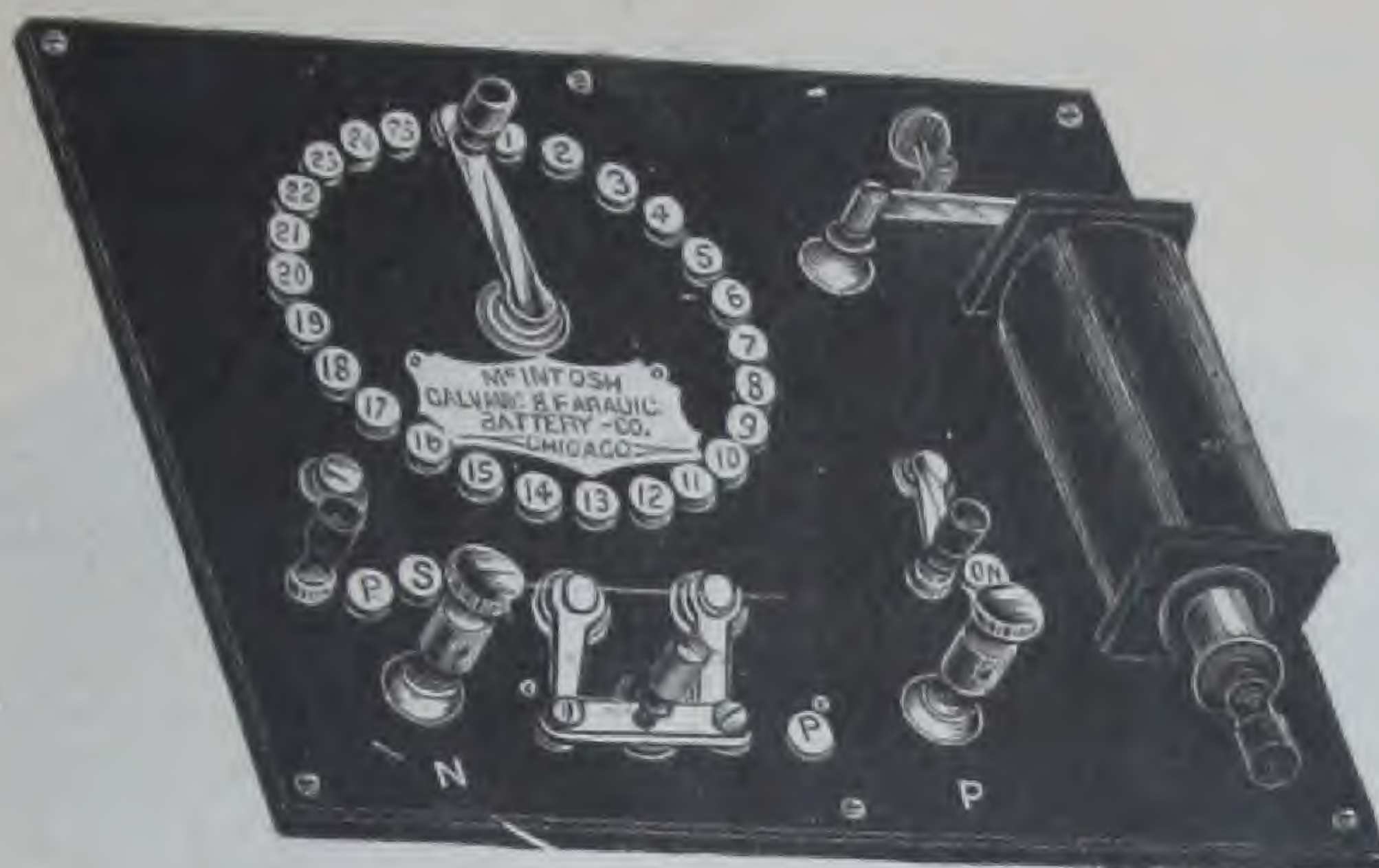


### McINTOSH COMBINED GALVANIC AND FARADIC BATH APPARATUS, No. 2.

This apparatus is made on the same plan as our No. 1, but less expensive. The coil is inclosed in a triangular, polished black-walnut case, the front of which is made of polished black rubber. The switches, binding posts, rheotome, etc., are all nickel-plated, and neatly arranged on on the sloping front. It is arranged to connect with any number of galvanic cells from 1 to 60. The coil is run with the large tray cell, and has the same bath tub and electrode as No. 1.

Price, with 36 5x7 gravity cells..\$175 00  
Price, without cells..... 140 00





### No. 2 OFFICE TABLE PLATE.

The following accessories are neatly arranged on a polished hard rubber base, 10x12 inches: A Galvanic Switch, for thirty-six or more cells; a Faradic Coil, with polished hard rubber ends and cover; Pole changer; two Binding Posts, from which the Galvanic, Primary or Secondary Faradic currents may be taken by means of switch, and a switch to connect the coil with the Galvanic cells. This is an elegant piece of work, and will meet the wants of the profession where a less expensive battery is desired.

Price.....\$30 00



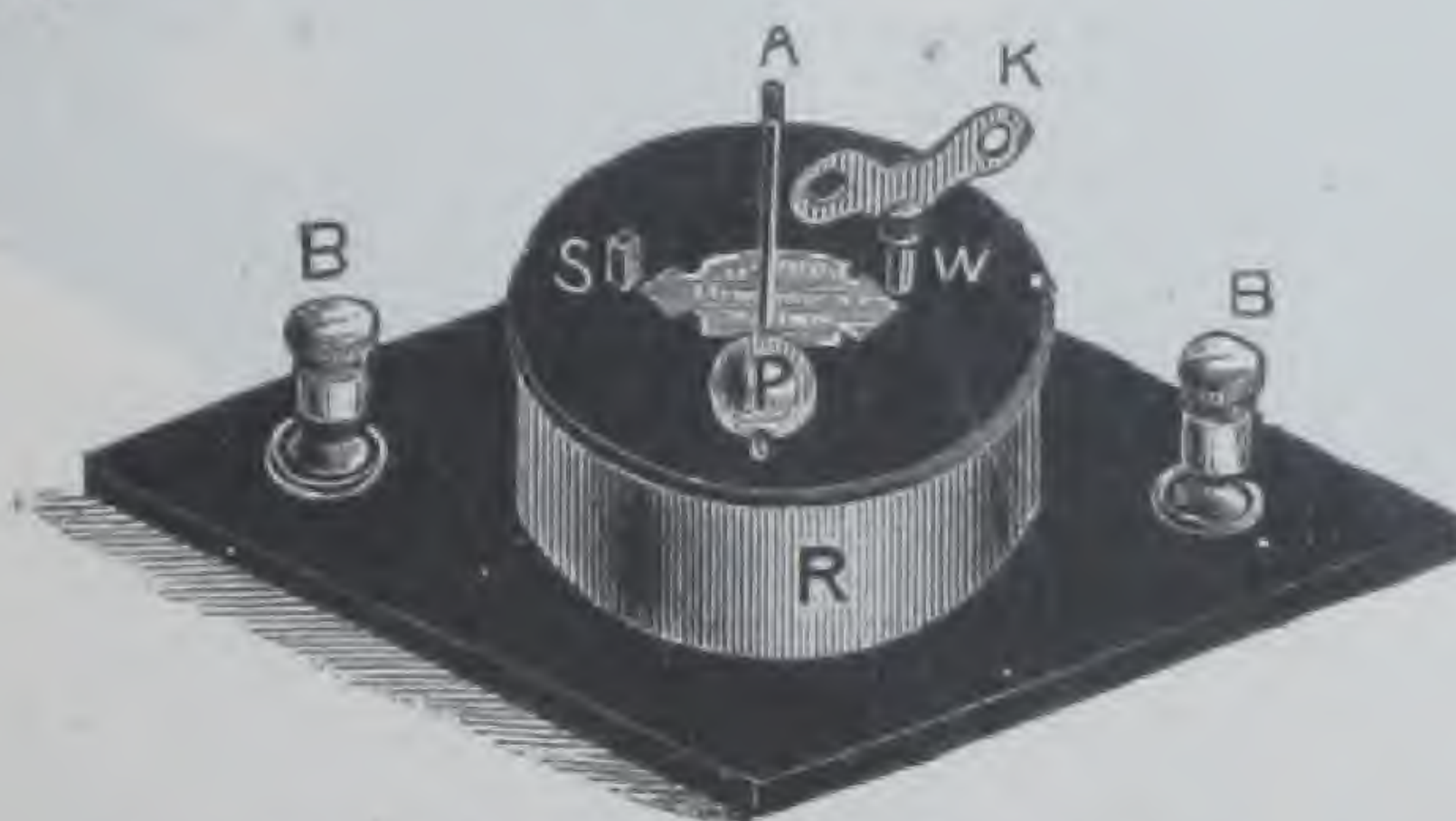
**No. 1 SWITCH BOARD**, arranged to connect with galvanic cells, on polished hard rubber base, 5½x7½ inches, switch with twenty buttons, two binding posts and a pole changer.

Price.....\$10 00

**No. 2 SWITCH BOARD**, 5½x6 inches, polished hard rubber, switch with ten buttons, two binding posts and pole changer.

Price.....\$8 00

NO. 1.



SIZE OF BASE 7½x4½ INCHES.

### AUTOMATIC RHEOTOME.

This Rheotome can be connected with any galvanic battery, to give slow or rapid interruptions of the current. It is put up with a polished hard rubber top and base and nickel plated sides; all the metal work is nickel plated. It occupies but little space, and is as durable as a clock.

Price.....\$15 00





ELECTRIC CHAIR.

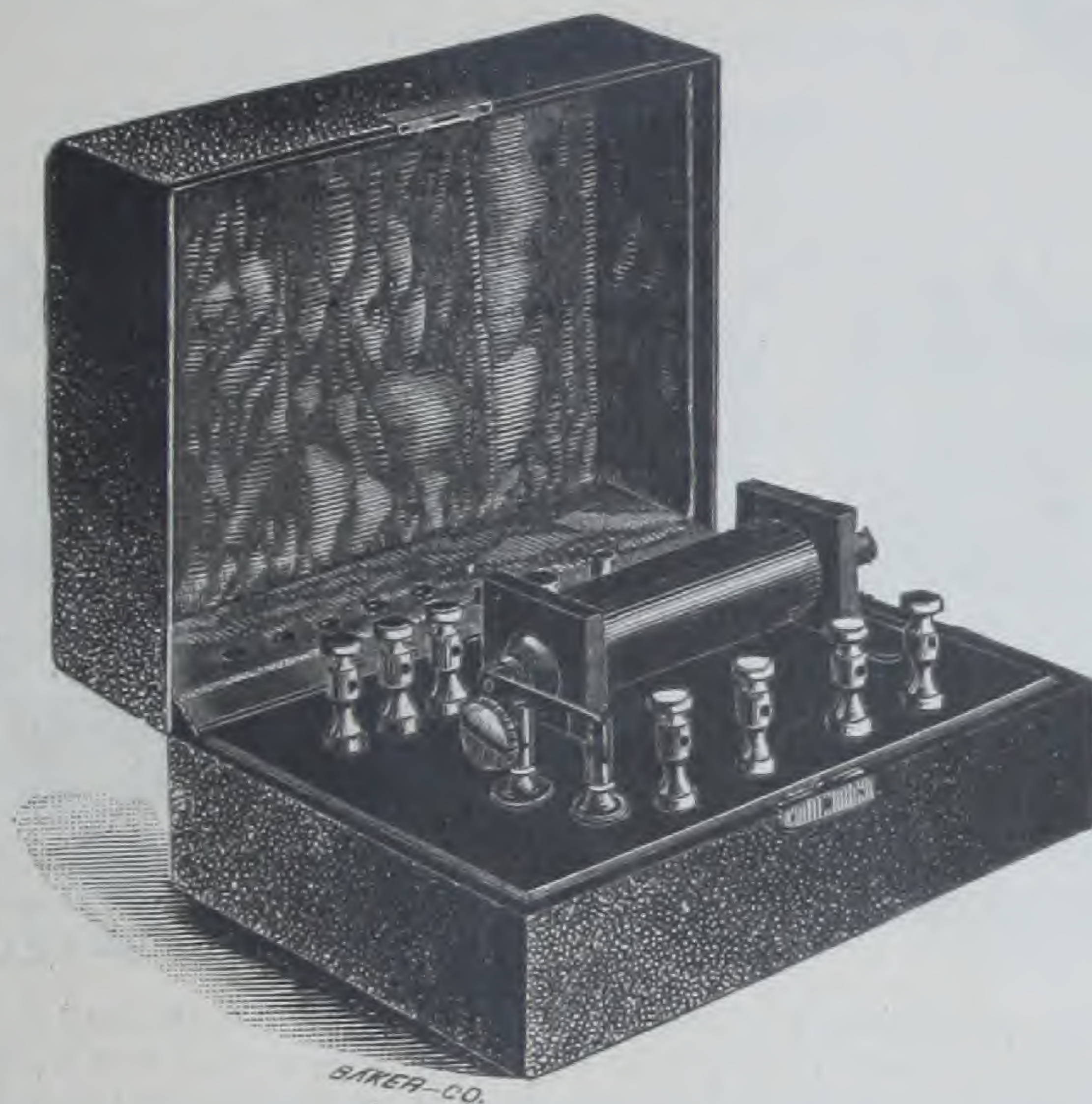
Our chair for giving electric treatment is complete in all its arrangements, and presents a very attractive appearance, the chair being made of walnut, handsomely finished, and the electrodes and attachments of metal, heavily nickel plated. Any make of battery can be used, and by means of the switch-board on the back, the current can be passed through any part of the body desired, or in any direction, the buttons in the switch connecting with the electrodes for neck, back, seat, right and left hand, right and left foot, and two extra binding posts on arms of chair so any special electrode can be attached that the operator desires to use. The chair can be raised or lowered, to accommodate the height of the patient. By means of a small wheel, the back electrode, as shown in small cut, can be raised or lowered and can be turned as shown by dotted lines, to confine the application of the current to the spine. The space between the discs on the electrode can be diminished at will, or either one can be removed. The neck electrode can be adjusted to the height of the patient by means of a set screw. The foot stool can be inverted, and as the inside is lined with metal, it can be filled, if desired, with water, or a dampened sponge or cloth placed in it. The flexible insulated electrode attached to arm of chair as shown in cut can be removed, and the other one substituted, and any electrode required can be attached in place of the sponge-covered disc.



This coil is made to run with two gravity cells. These cells give a very even, steady current, and will work for months with very little attention. The elements remain in the fluid, and there is no action on them when the battery switch is turned off. The same size and finish of coil can be made to run with any form of cell. This style of coil is well adapted to use on an office table, electric chair, cabinet, bath or any apparatus that would be practicable to connect with a coil. The currents from these coils are very smooth and even; they can be graduated so as to be barely perceptible, or made so strong as to be unbearable.

Price of Oculists' and Aurists' coil with two gravity cells.....\$20 00

Price of Oculists' and Aurists' coil without cells..... 18 00



Size of Case 5x7x2 $\frac{1}{4}$  inches.

### THE DENTAL BATTERY.

The constant call for a Faradic Battery for Dentists' use induced us to make and place the above on our list. The coil is made in the same style and finish as the coil on our No. 3 Physician's Battery. It is on a hard rubber base; the metal work is finely nickel-plated. It is put up in a neat Morocco case, lined with crimson or purple velvet. The contrast of the polished black rubber and nickel plated work with the velvet-lined case gives a very fine and attractive appearance. *This Battery is also very neat and convenient for general use in the Physician's office.*

Price with Grenet cell, conducting cords, electrodes and forceps connection.....\$25 00

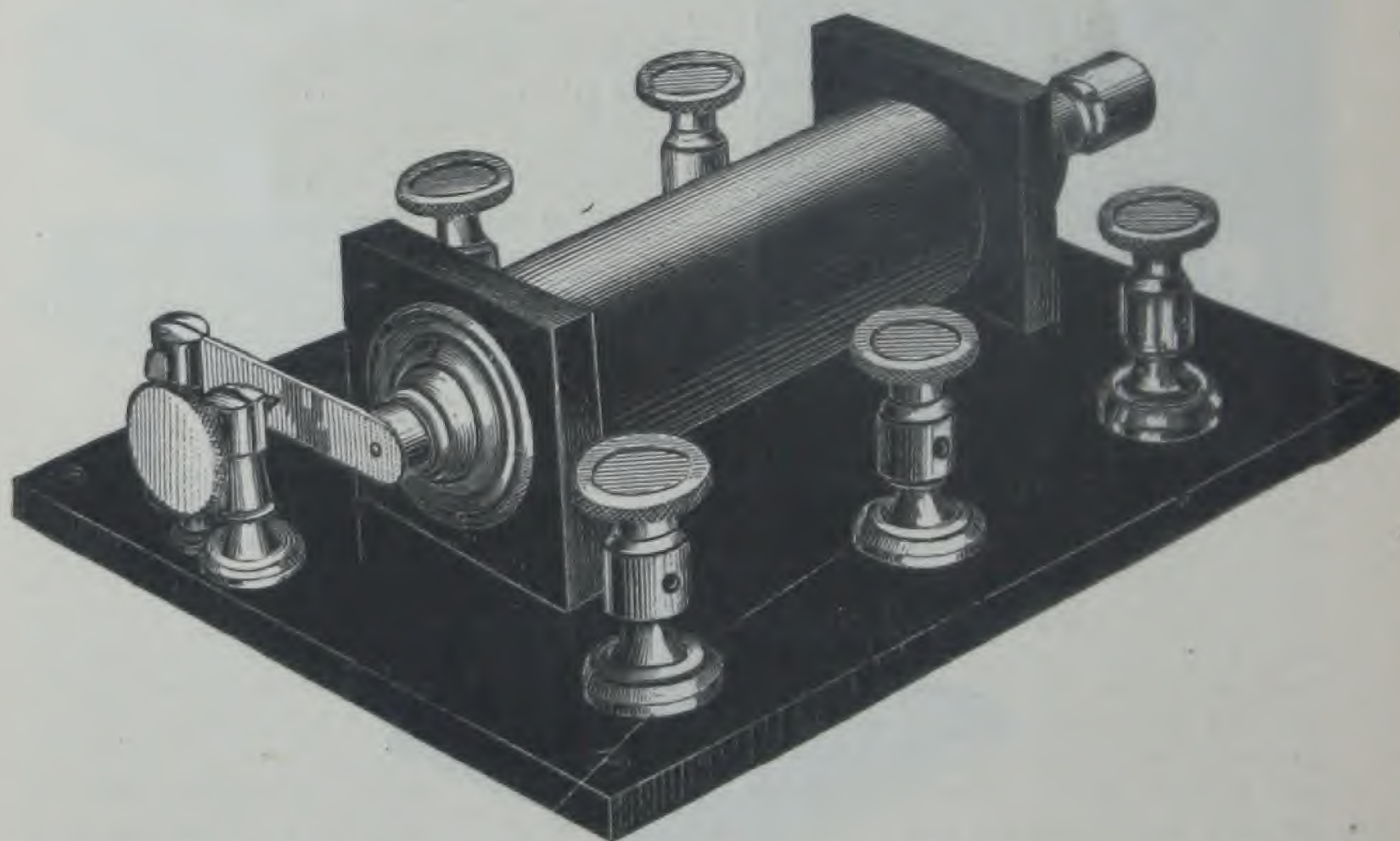




### GALVANOMETER.

We make two sizes, on polished hard rubber bases, large size  $6\frac{1}{2} \times 3\frac{1}{2}$  inches, and small size  $5\frac{1}{2} \times 3$  inches; metal work finely nickel plated. These galvanometers can be connected to any make of galvanic battery, to test the current.

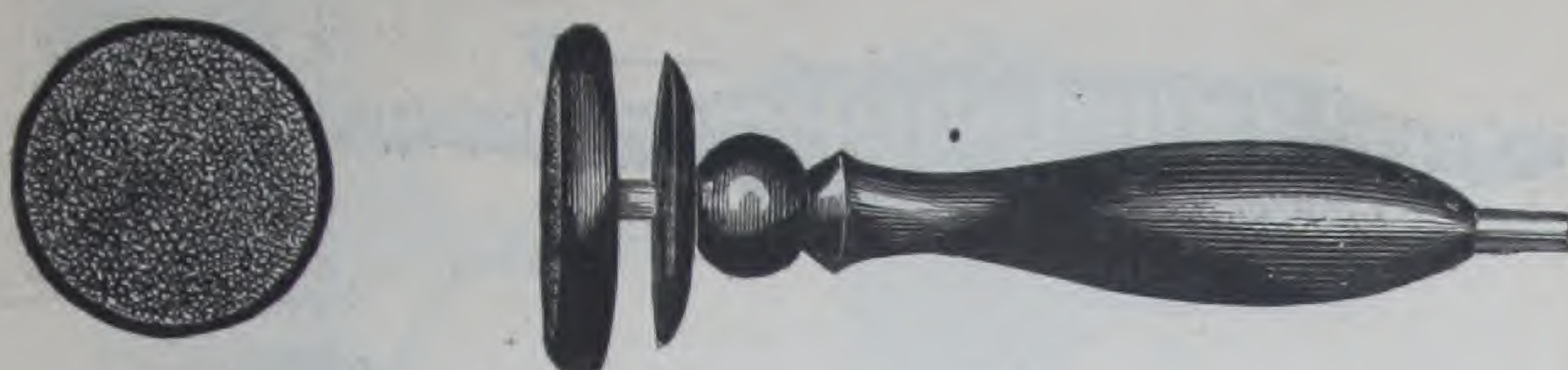
Price, large size.....	\$6 00
“ small size .....	5 00



### FARADIC COIL FOR OCULISTS' AND AURISTS' USE.

This coil is five inches long, and two inches in diameter, has hard rubber spool, ends and cover, and is securely fastened on a polished hard rubber base,  $6 \times 8$  inches. The binding posts, rheotome, etc., are all finely nickel plated.



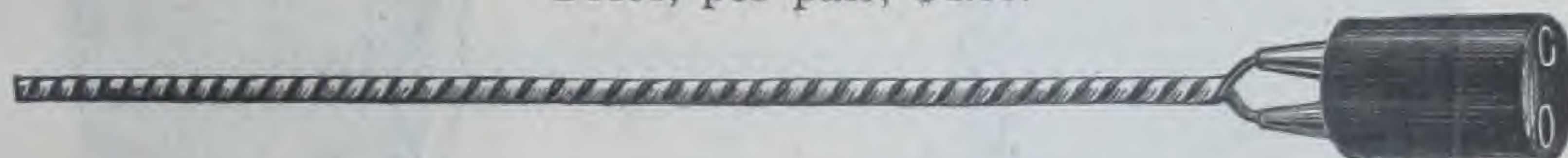


#### DR. MCINTOSH'S NEW CARBON ELECTRODE.

This Electrode is designed to take the place of the old style Sponge Electrode. The *carbon disc* (which take the place of the sponge) is soldered to a metal disc, and both are covered with soft rubber (except the outer surface of the carbon), which is then vulcanized or hardened. By this process, the rubber is made to adhere so firmly to the edge of the carbon disc that they become virtually one piece. This prevents fluids from entering between the carbon and rubber.

Between the rubber handle and rubber-covered carbon is a hard rubber disc, to hold a cloth cover or sponge when the handle is screwed against the disc. This arrangement is similar to the Universal Sponge Holder. It is very convenient, as cloth covers can be used over the carbons and changed with each treatment, thus insuring perfect cleanliness.

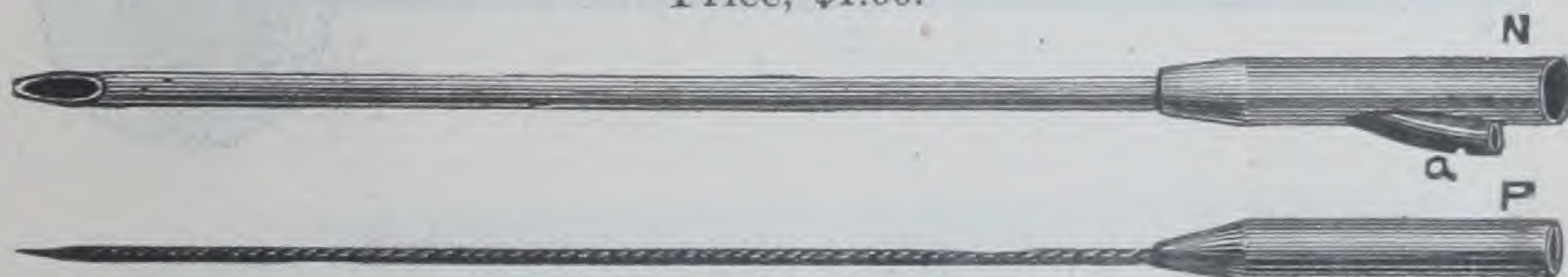
Price, per pair, \$4.00.



#### DR. MCINTOSH'S NEW ELECTRIC BULLET PROBE.

This probe is made by twisting two wires together with an insulating substance between them. On one end of the probe the wires bifurcate and connect through the rubber insulating knob, with conducting cords from one galvanic cell. In the other end of the probe the wires are only separated by the insulating substance. To use the probe, connect with one galvanic cell, including a galvanometer in the circuit. When the ends or side of the probe touch any metal so as to complete the galvanic circuit, the galvanometer is instantly deflected.

Price, \$1.00.

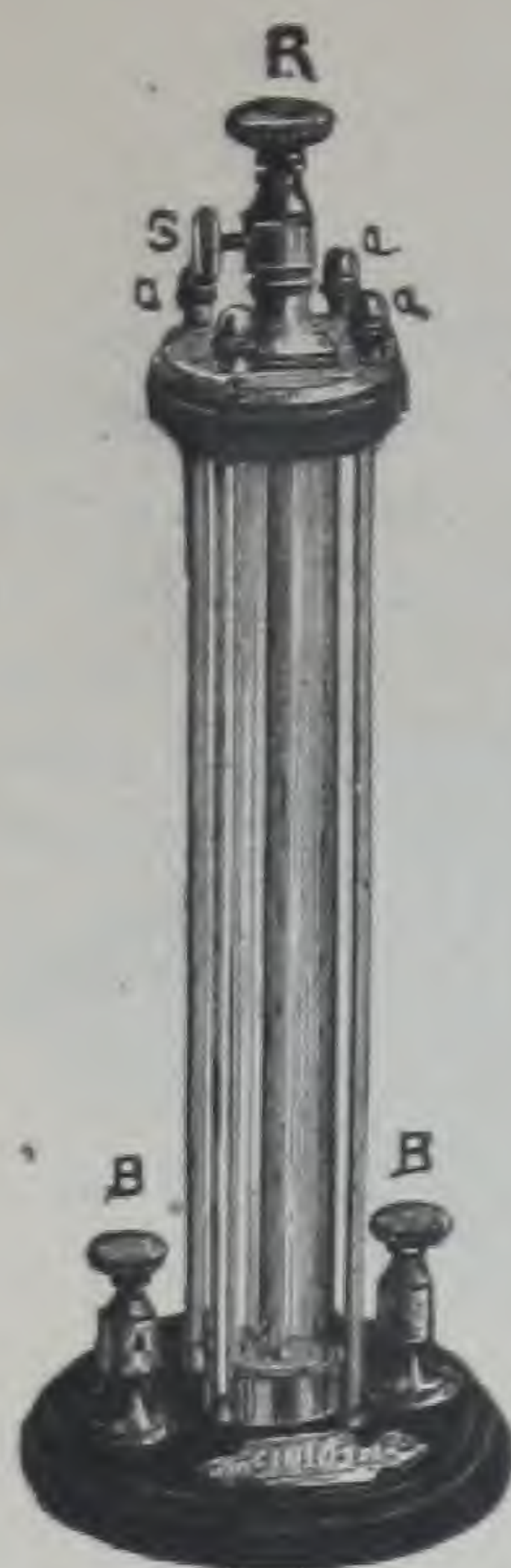


#### ELECTRIC EXPLORING NEEDLE.

The Electric Exploring Needle is as simple as the probe. It consists of a hollow needle, similar to those used with an aspirator. The large end is made to connect with one pole of a battery cell. A small insulated stylet (which fits the needle loosely) connects with the other pole of the cell. A galvanometer is included in the circuit. To use the instrument, connect as above described, and introduce the needle into the part where the ball is supposed to be. If any hard substance impedes its progress, introduce the stylet through the needle. If the points come in contact with any metal substance, the galvanometer is deflected.

Price, \$2.50.





## WATER RHEOSTAT.

The use of the Rheostat is to modify the intensity of a current of electricity by passing it through water or resistance coils.

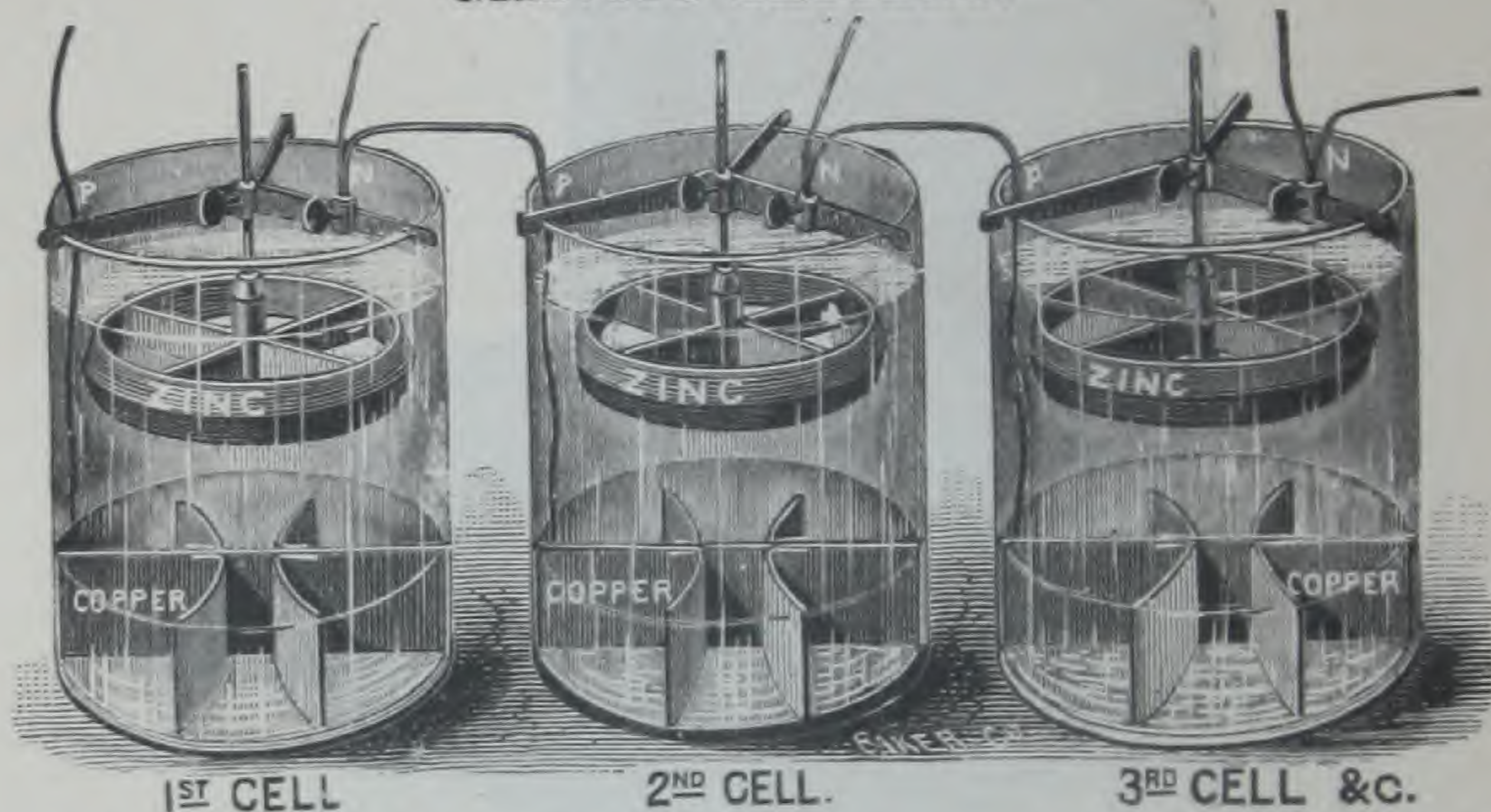
By its aid, the physician can gradually increase the power of a current without shock to the patient, which is indispensable in treating the organs of special sense, brain, etc.

These instruments can be used with any make of battery.

Price of Water Rheostat, 9 inches high, on hard rubber base,  $3\frac{1}{4}$  inch in diameter, metal work nickel plated..... \$10 00

Price of Coil Rheostat, giving from 100 to 2,500 ohms resistance..... 30 00

## GRAVITY BATTERY.



This form of Battery is the best adapted for a stationary office battery, as it is the easiest to keep in working order, and the most economical. When once charged and connected, it will run for months, without the necessity of removing and cleaning the elements. The only attention it requires is to supply water, as it evaporates, and occasionally a little sulphate of copper. It can be connected with any of our switch boards, which can be attached to a table, electric chair, electric bath, vapor bath, or any apparatus that would be practicable to connect with a galvanic battery.

This battery is so simple that any one, with the aid of the full directions we furnish, can charge and connect the cells, etc., without any trouble.

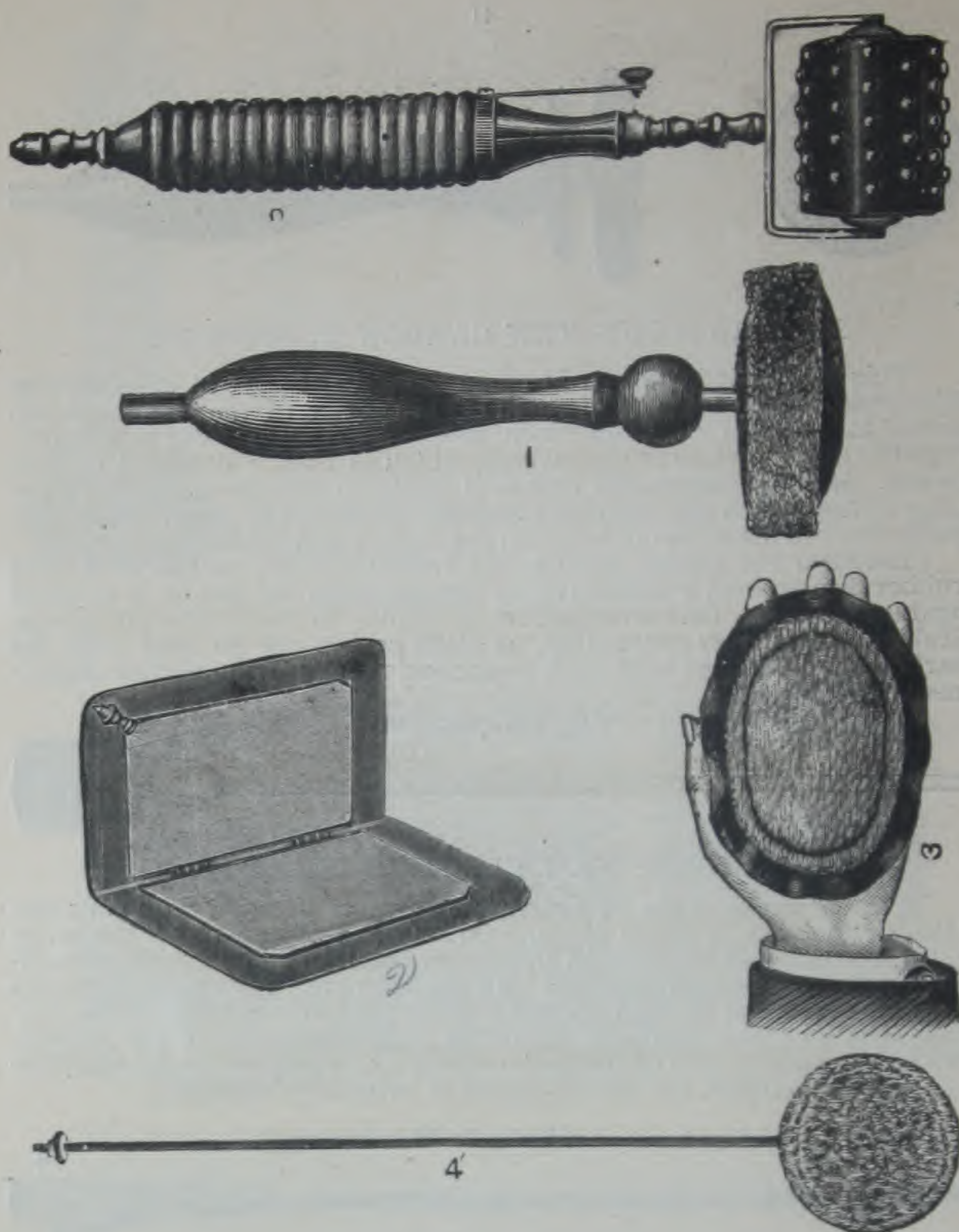
GRAVITY BATTERY.	Main. 5x7 inch. No. 1.	Main or Local. 6x8 inch. No. 2.	Extra Local. 7x8 inch. No. 3.
Cell complete.....	\$1 00	\$1 15	\$1 35
Zinc.....	30	40	50
Copper.....	20	20	20
Tripod Hanger.....	20	20	20
Jar, Glass.....	30	35	45





- |     |   |         |
|-----|---|---------|
| A.  | Holmes for large sponges with universal handle \$1. 50. without handle. | 1. 00   |
| B.  | Sponge-Cup with universal handle.                                       | 1. 00   |
| 5.  | Ball Rectal Electrode (standard)  | \$1. 00 |
| 6.  | Rectal Electrode, nickel plated   | 1. 00   |
| 7.  | Rectal Electrode, insulated with Polished Hard Rubber                   | 1. 00   |
| 8.  | Rectal Electrode, large, nickel plated                                  | 1. 00   |
| 9.  | Vaginal Electrode, nickel plated  | 1. 00   |
| 10. | Vaginal Electrode, insulated with Polished Hard Rubber                  | 1. 00   |

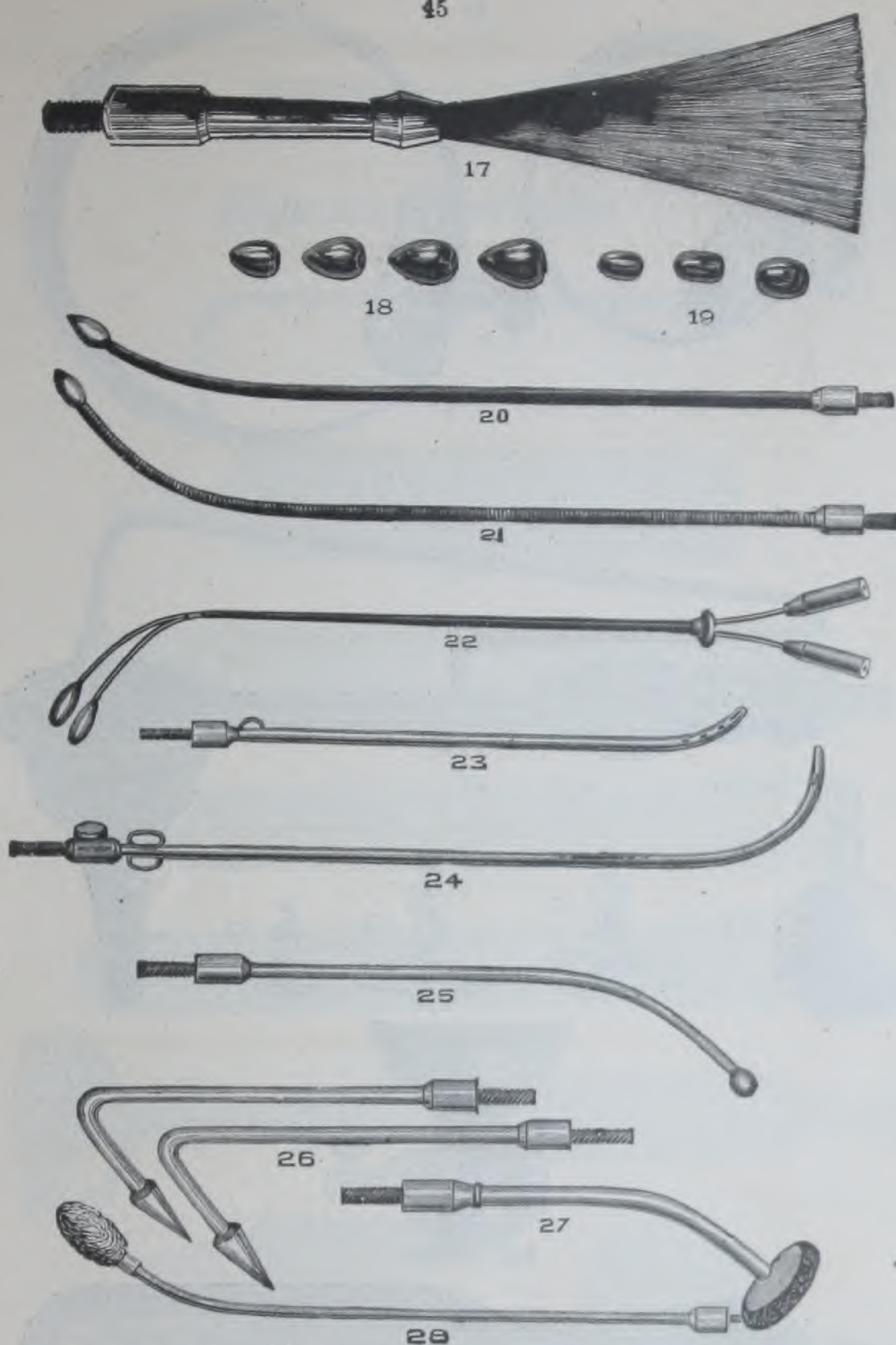




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|--|--------|
| 0. Wheel Electrode of Hard Rubber, set with metallic points for muscular Faradization; universal hard-rubber handle, with current interrupter..... | \$5 00 |
| Handle without Wheel.....  | 3 00   |
| 1. Universal Handles, with Sponge-covered Discs, per pair.....   | 1 50   |
| 3. Sponge-covered Electrode, Insulated with Soft Rubber for general application with the hand .....  | 1 50   |
| 2. Folding Foot Plate Insulated on one side with Soft Rubber, to prevent wetting carpet, with movable flannel cover.....                           | 5 00   |
| 4. Sponge-covered Electrode, with long handle, to be used under the clothing.....  | 1 50   |

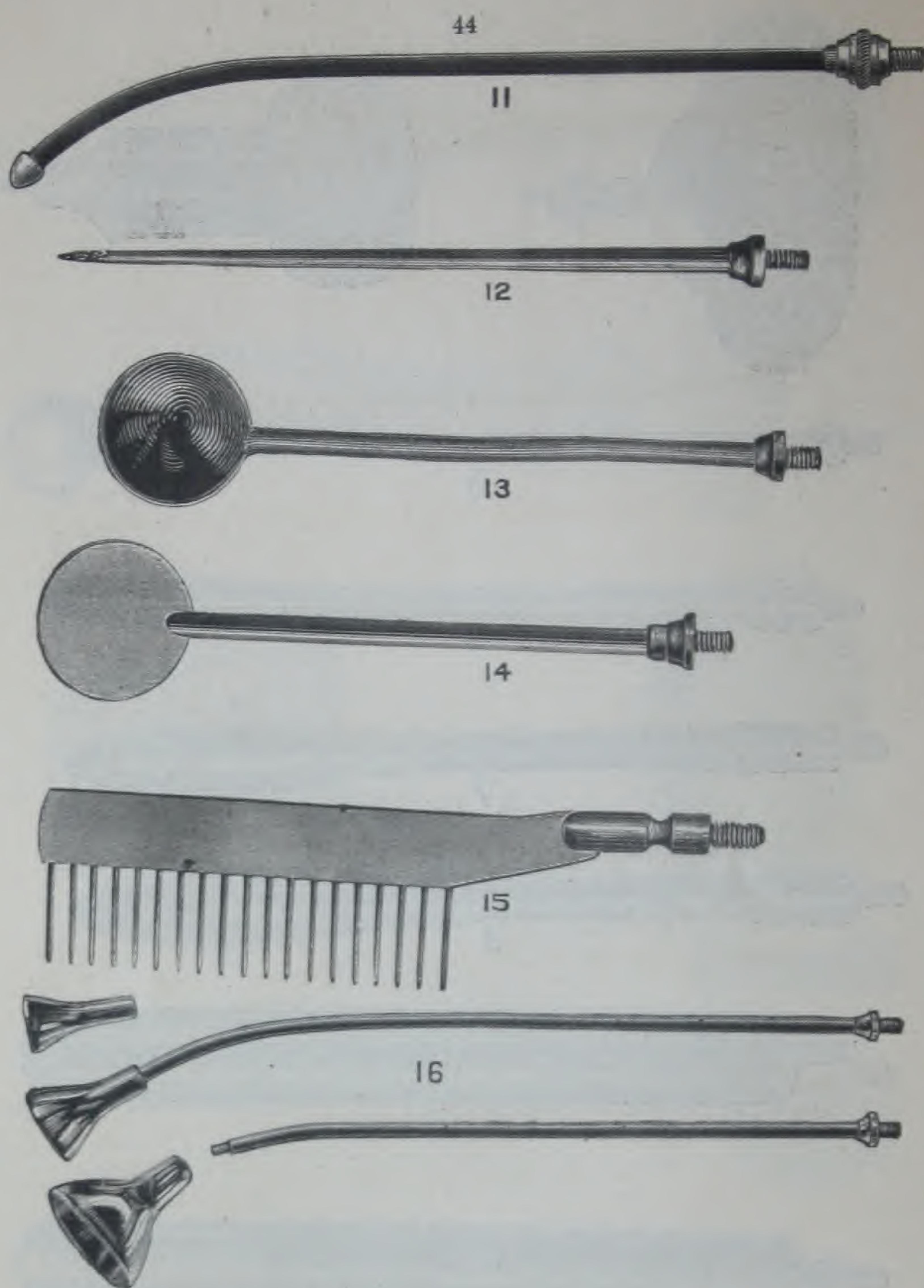


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|---------|---|--------|
| 17.     | Metallic Brush.....   | \$1 00 |
| 18, 19. | Olives, different sizes, which may be attached to No. 20, each.                   | 20     |
| 20.     | Spiral Flexible Uterine or Urethral Electrode, insulated.....                     | 1 25   |
| 21.     | Uterine or Urethral Electrode, insulated with hard rubber.....                    | 1 25   |
| 22.     | Elastic Electrode, for conveying both Currents to the Uterus or Urethra.....      | 3 00   |
| 23, 24. | Metallic Catheter, (silver), each.....  | 2 50   |
| 25.     | Laryngeal Electrode, nickel plated, insulated.....                                | 1 00   |
| 26.     | Duchenne's Metallic Points, for muscular Faradization, per pair, gold plated..... | 2 50   |
| 27.     | Small Sponge Electrode, for external application to the larynx....                | 1 50   |
| 28.     | Laryngeal Electrode, with sponge tip.....   | 1 50   |





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| 11. | Nasal Electrode, nickel plated.....                      | \$1 00 |
| 12. | Small Aural and Nasal Electrode.....                     | 75     |
| 13. | Tonsil Electrode, nickel plated.....                     | 1 00   |
| 14. | Tongue Plate, insulated.....                             | 1 00   |
| 15. | Comb Electrode, nickel plated.....                       | 1 50   |
| 16. | Cup-shaped Electrode, for Uterus, three sizes, each..... | 2 00   |
|     | Insulated.....   |        |





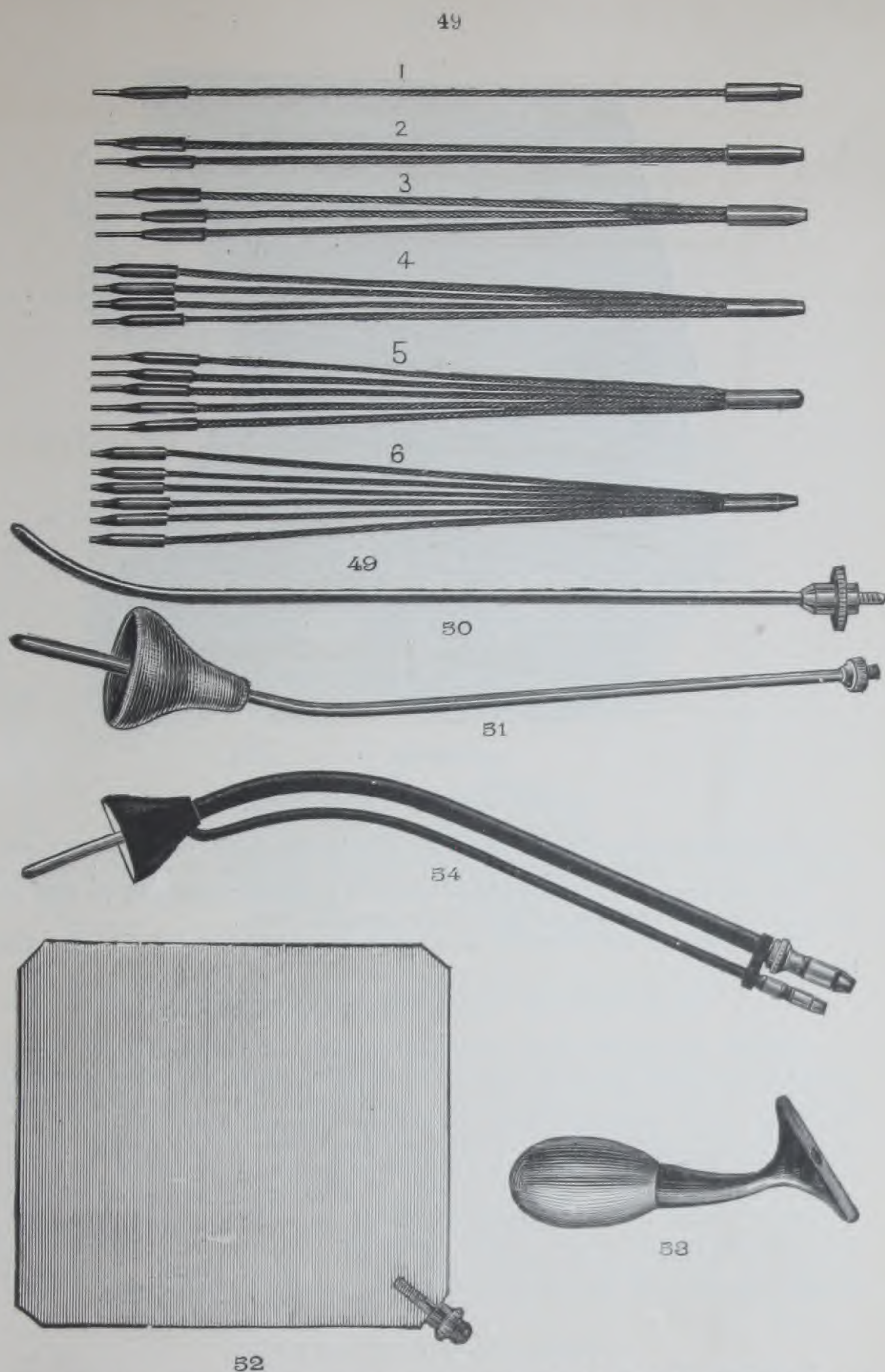
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| 36. | Metallic Scourge, nickel plated.....   | \$ 75 |
| 37. | Small Eye Electrode.....   | 75    |
| 38. | Metallic Points for Faradization.....  | 1 00  |
| 39. | Dental Electrode.....  | 1 00  |
| 40. | Metallic Handles, per pair.....  | 1 50  |
| 41. | Pole Changer, (handle of hard rubber).....   | 5 00  |
| 42. | Vaginal Electrode, for both currents, insulated in the centre,<br>nickle plated..... | 4 00  |
| 43. | Vaginal Electrode, for both currents, insulated in halves.....                       | 4 00  |
| 44. | Sponge Holder and Current Breaker, (handle hard rubber).....                         | 4 00  |
|     | Sponge Holder without Handle.....  | 1 00  |
| 45. | Sponge Cup, nickel plated, each.....   | 50    |
| 46. | Disc. Electrode, with insulated points.....  | 1 00  |





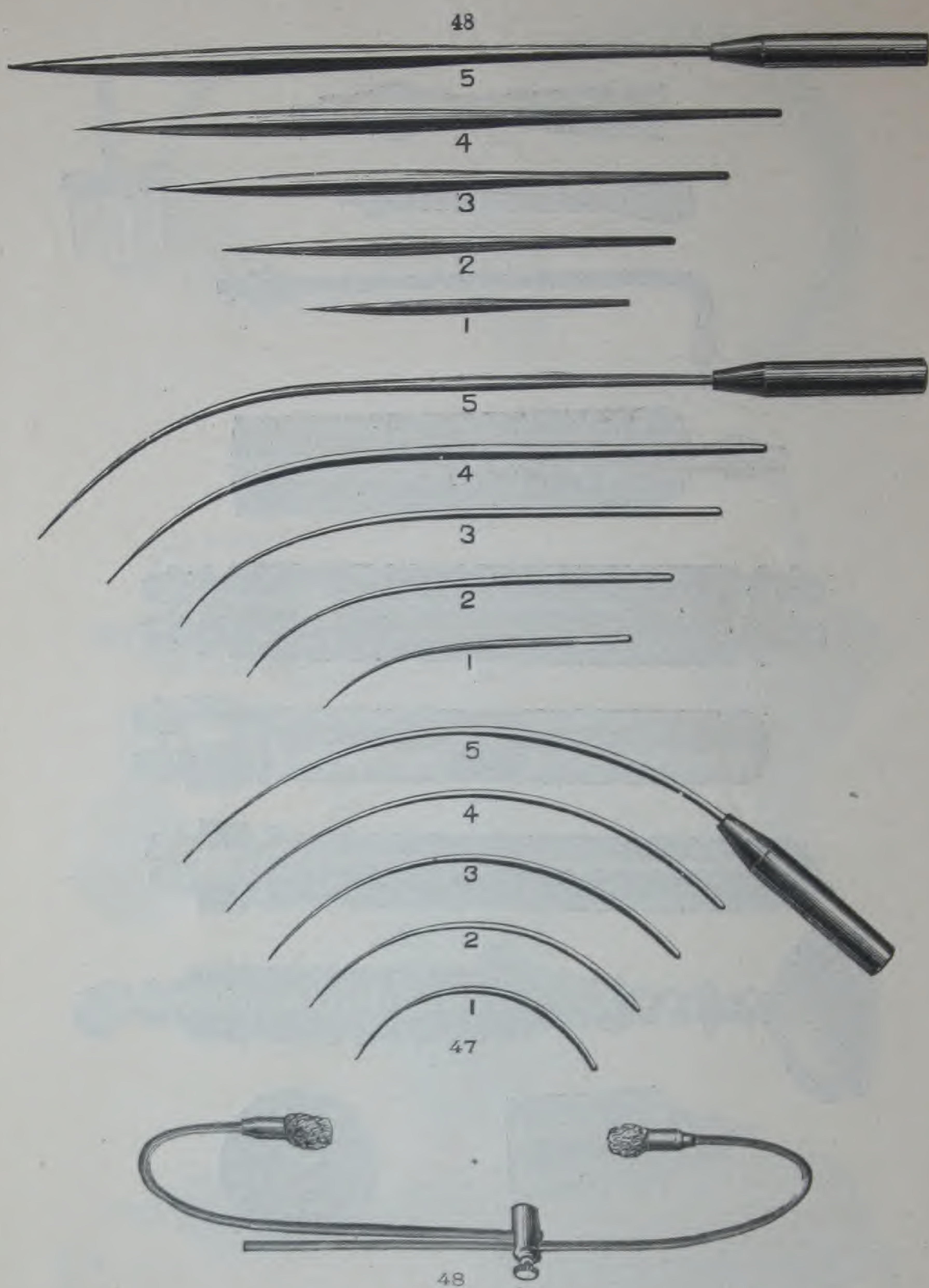
30.	Neck and Arm Electrode.....	each	\$2 00
31.	Ear Electrode.....		2 75
32.	Ball Electrode.....		75
33.	Disc Electrodes, three sizes, each.....		50
34.	Eye Cup Electrode, new style.....		2 00
35.	Hair Brush Electrode..		2 50





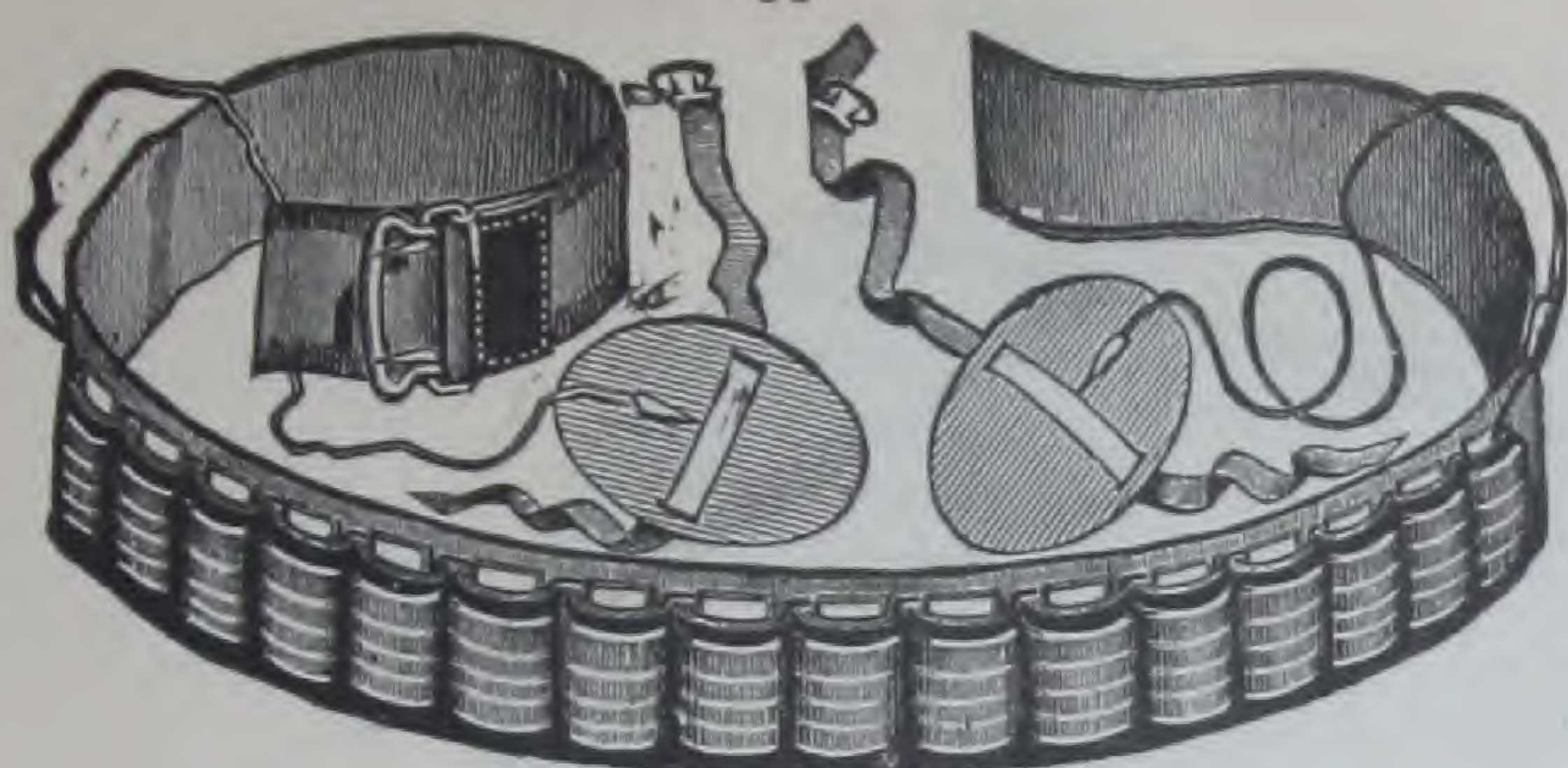
49. Needle holders with cord and tips to hold 1, 2, 3, 4, 5 or 6 needles of any size. Price without needles, 60c, \$1.00, \$1.25, \$1.50, \$1.75 and \$2.00.
50. Metallic Sound, nickel plated..... \$ 75
51. Uterine Electrode, with cup and stem (insulated) ..... 2 50
52. Metallic Foot Plate..... 50
53. New style of Rectal Electrode, insulated..... 2 50
54. Double Uterine Electrode with cup and stem (insulated)..... 3 50



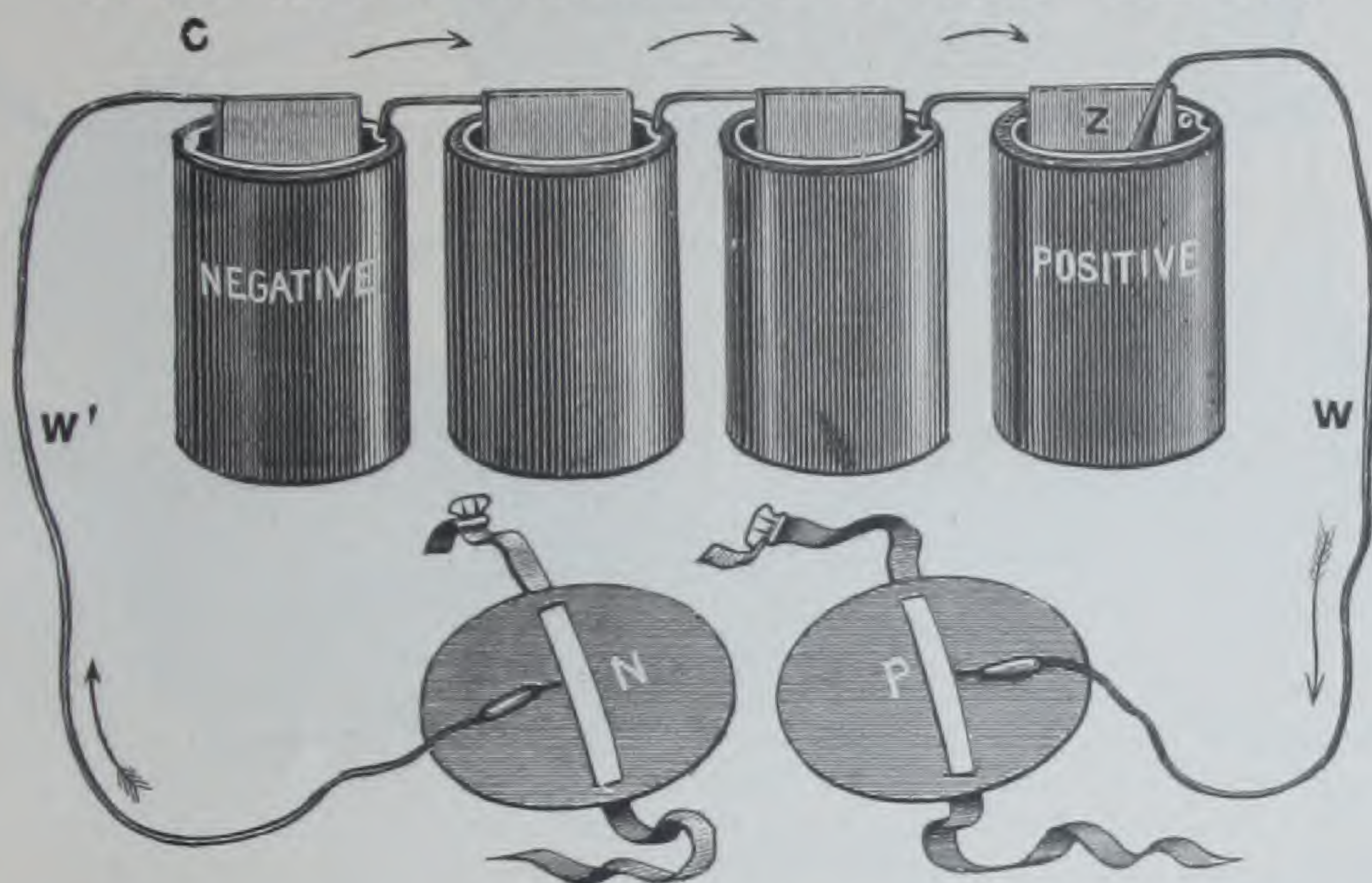


- 47 Needles for Electrolysis. Straight, half-curved, full-curved, flattened needles (shown in cut full size). Extra heavy triple gold plated (insulated), price of No. 1, 2, 3, 4, 5 each, \$1 00. Platinum needles each from \$2 00 to \$4 00.
48. Double Ear Electrode, insulated,.....\$2 00.





## THE MCINTOSH ELECTRIC BELT.



This cut represents a section of cells from the McIntosh Electric Belt; Z, zinc in the positive cell; W, wire connecting cell and positive electrode plate P; C, represents copper lining of the negative cell; W', wire connecting with the negative electrode N.

This belt has been carefully devised by Dr. L. D. McIntosh for the purpose of meeting all the wants of a mild Galvanic Battery. The belt consists of a combination of cups or cells placed in pockets on the belt, thus forming a complete Galvanic Battery. Each cell is composed of hard rubber lined with copper, which metal constitutes the negative plate. The cells, being covered with hard rubber, are perfectly insulated, or, in other words, do not permit the electric current to pass only on the conducting wires from the poles of the battery; plates of zinc of the proper size and thickness are wrapped in a porous material and placed in the cells; a wire soldered firmly to the zincs connects to the copper of the cells in such a manner as to give a hinge motion, thus making the belt pliable. By simply dropping a few drops of dilute vinegar in each cell, the electric current is generated, and will continue uninterrupted for twenty-four hours. The power of the current is so great that it will decompose water.

By applying the positive and negative electrodes, one to each temple, a sharp pricking or burning sensation, similar to that produced by a strong mustard paste, is felt.

It gives a strong or weak current. If a weak current is desired, less cells should be included in the circuit (see directions). The electrodes, or pieces of metal connected by wires with the cells to convey the current to the body, allow of application to any part; the current can be used locally, or the whole system can be brought under its influence. It is light and no discomfort whatever to the wearer.

Price.....\$10 00.





CASE No. 1.

## ELECTRODES IN CASES.

Physicians selecting and ordering electrodes from our list can have them fitted in velvet-lined morocco cases, at a cost of from \$2 to \$5 each.

We can furnish Electrodes in cases to order, from \$15 to \$50, and we also keep the following-described cases in stock.

The selections are made so as to give as complete a set for the price as possible:

## ELECTRODE CASE NO. 1, CONTAINING

1 Wheel Electrode, with universal handle of polished hard rubber, wheel of the same material, set with metallic points, for muscular Faradization; 1 Holder for large sponge (nickel-plated); 1 Rectal Electrode, insulated with polished hard rubber; 1 Vaginal Electrode, insulated with polished hard rubber; 1 Tongue Electrode; 1 Cup-shaped Uterine Electrode; 1 Metallic Brush; 1 Uterine or Urethral Electrode, insulated with polished hard rubber; 1 Spiral Flexible Uterine or Urethral Electrode, insulated; 1 Laryngeal Electrode, with sponge tip, insulated with polished hard rubber; 1 Ear Electrode, insulated with polished hard rubber; 1 Eye Cup Electrode, new style; 1 Hair Brush Electrode; 1 Needle Holder for Electrolysis, with two needles. Price, \$30.

## CASE NO. 2, CONTAINING

1 Universal Sponge Holder, nickel-plated; 1 Rectal Electrode, nickel-plated; 1 Vaginal Electrode, nickel-plated; 1 Nasal Electrode, insulated with polished hard rubber; 1 Cup-shaped Uterine Electrode, insulated with polished hard rubber; 1 Spiral Flexible Uterine or Urethral Electrode, insulated; 2 Duchenne's Points, nickel-plated; 1 Ball Electrode, nickel-plated; 1 Metallic Brush; 1 Disc Electrode; 1 Needle Holder for Electrolysis, with one needle. Price, \$15.



Electricity is generated at once, and the electric charge constantly sustained by the friction of the carriers and brushes; hence the machine remains in practical working order under the most unfavorable atmospheric conditions.

Recent investigation by leading physicians, among whom Dr. W. J. Morton, of New York, is prominent, has led to the discovery that *static* electricity is an important factor in medical treatment, and produces certain effects which cannot be obtained from *current* electricity. And improvements made in this machine, protected by patent, specially adapt it to medical practice. The most important of these is the application of

#### THE SWITCH AND ITS CONNECTIONS.

This, as seen in the cut, is placed between the Leyden jars and in connection with their outer coatings, so that the induced current between them is controlled by the operator. As this current flows at the same instant with the discharge between the sliding electrodes, connected with the inner coatings, it is only necessary to separate them to obtain the interrupted induced current similar to the Faradic.

In connection with the switch are seen cable cords and electrodes, which may be held by insulating handles and applied to any part of the body. Opening the switch changes the current to the cords and electrodes, and on separating the sliding electrodes the Faradic effect is at once produced, which may be varied from the slightest tremor to the most violent muscular twitchings. A separation of one-sixteenth of an inch produces a mild, pleasant sensation; one-eighth to one-fourth of an inch becomes painful, while a separation of one-half to three-fourths of an inch can hardly be borne by the strongest nerves.

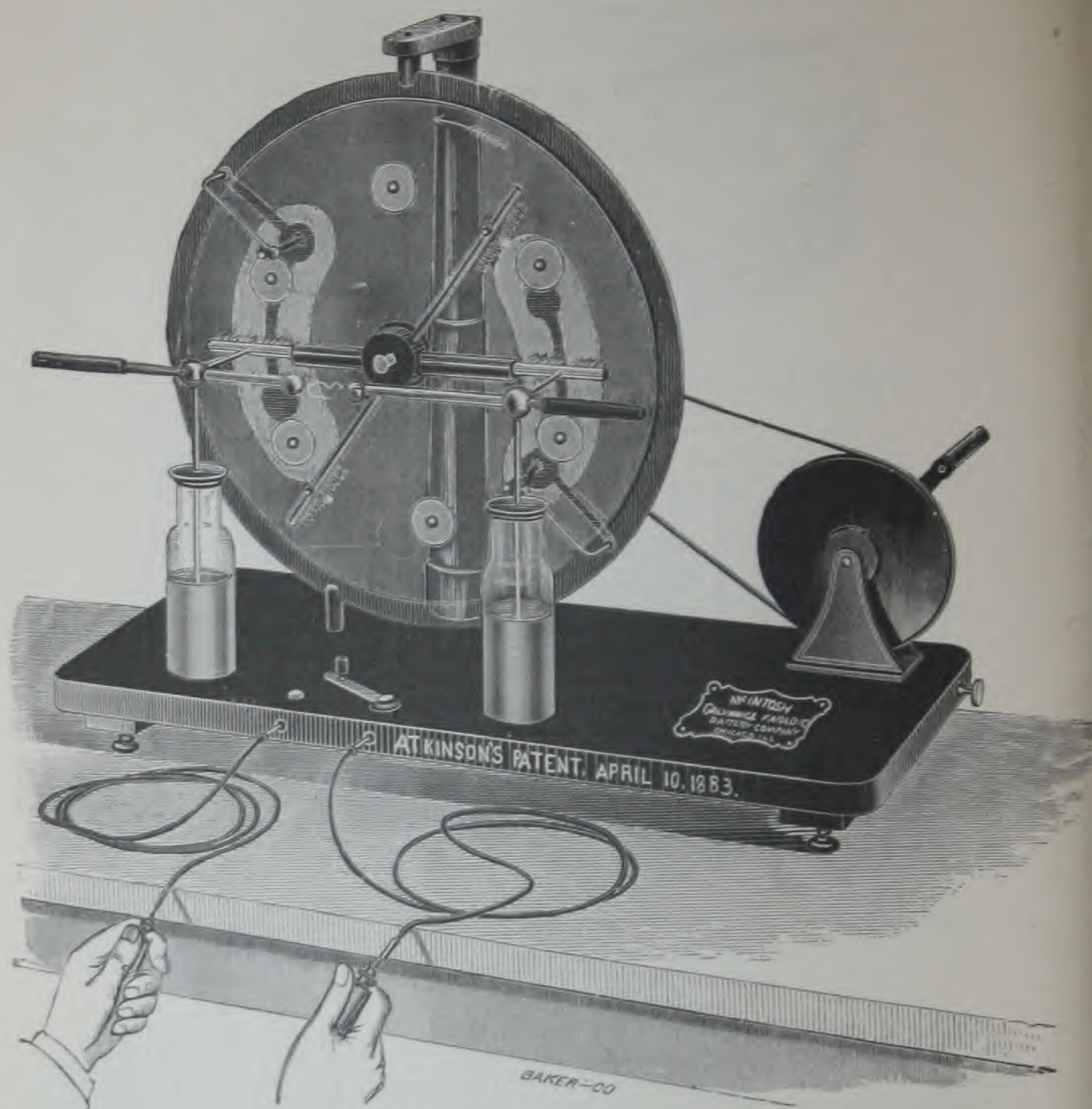
When the switch is closed, and the sliding electrodes drawn out beyond sparking distance, a person seated on an insulated platform, and connected by cable cord with the ball surmounting the Leyden jar farthest from the driving wheel will receive a condensed charge of positive electricity, or of negative if connected with the jar nearest the driving wheel. When the charge has been sustained as long as desired, it may be drawn off by a sponge, roller, or point electrode connected with the other jar.

The current flowing from the point is known as the "*electric wind*," and produces a cooling, soothing sensation.

The heaviest clothing offers comparatively small resistance to static electricity, so that the removal of clothing is seldom necessary in medical practice; but its passage through clothing or the air always produces a spark, and a sensation more or less painful, as it strikes with accumulated force. A succession of sparks concentrated on one spot produces irritation and reddening of the surface. The insulating handle and ring is used to keep the cable cord out of contact with the operator, patient and surrounding objects, and prevent sparks through its insulating envelope.

The display at night from this machine is very impressive; brushes and pencils of light stream and flash from every part, the space between the plates is filled with sparkling scintillations, sparks dart between the electrodes like miniature chain lightning, while at every flash the rapidly moving disks on the revolving plate stand out as perfect in form as if motionless; thus proving that the spark is instantaneous, and the seeming time occupied in its passage an optical illusion. Moving the electrodes close together, the spark becomes apparently continuous, affording sufficient light to read fine print at a short distance. Here, then, we have practically the electric light with a static dynamo-machine and regulator. By using the Geissler tubes, giving the green, pink and violet colored lights, the effect is very beautiful, and can be varied, using either the direct or the induced interrupted current, for which this machine is specially adapted.





## Atkinson's Töpler Electric Machine.

Patented April 10, 1883.

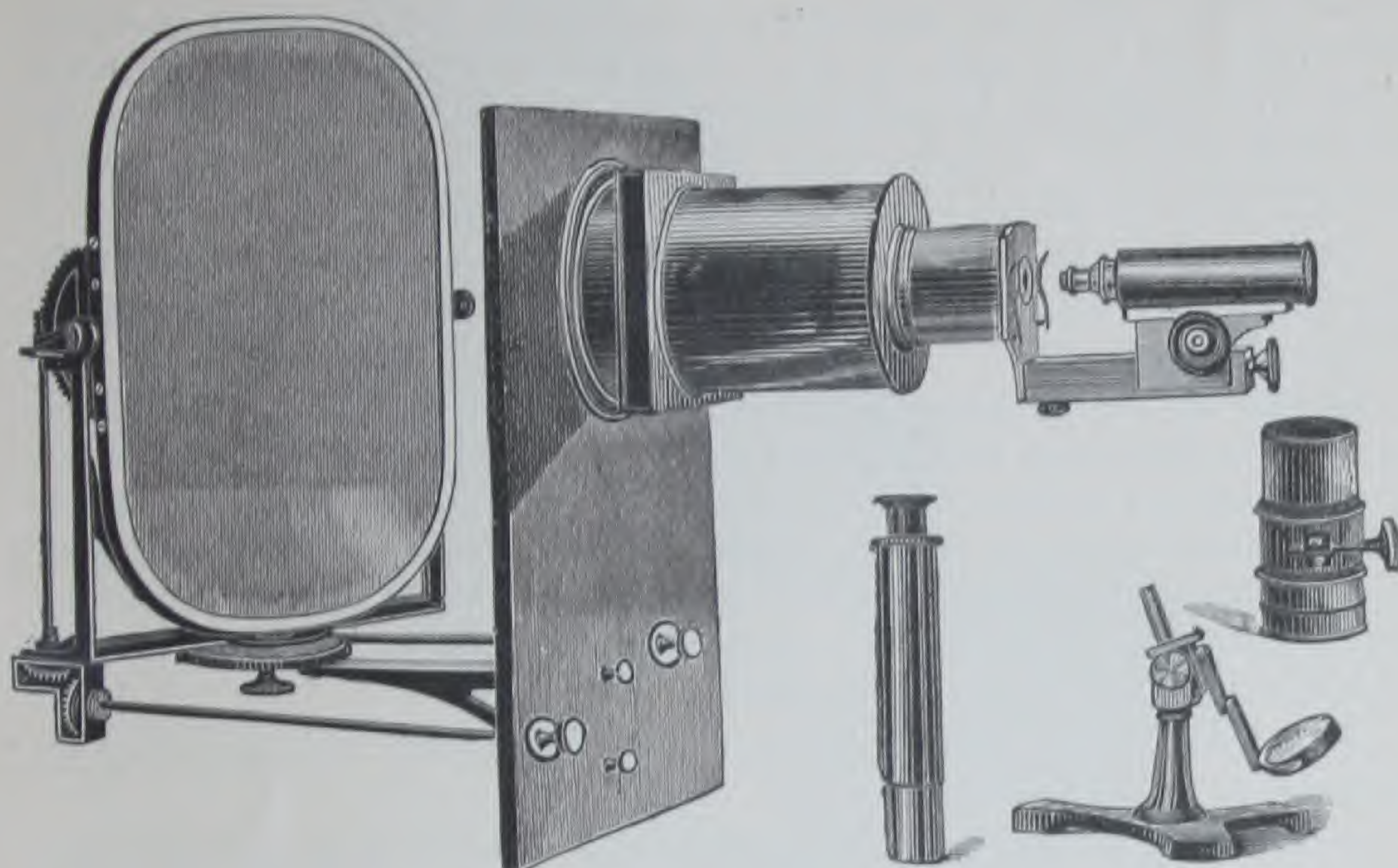
An electro static machine of high tension and large quantity, whose sensitiveness to atmospheric influences shall not interfere with its practical working has long been a desideratum with scientists. The cut represents such a machine. It is made with two circular plates of glass, one stationary, the other revolving close in front of it; two sets of combs and two Leyden jars, with a switch between them.

To the back of the stationary plate are attached two sets of paper and tin-foil *inductors*, connected with which are two wire brushes; and to the front of the revolving plate are attached six metal *carriers* with raised centers, which are brought into contact with the brushes, as the plate revolves, and generate the electric charge, which is rapidly increased by induction. Opposite parts of the plates and opposite inductors and carriers become oppositely electrified, condensation takes place in the jars, and sparks pass between the sliding electrodes, which may be increased to seven inches or more in length.



# DR. McINTOSH'S Solar Microscope and Stereopticon Combination

FOR THE USE OF  
COLLEGES, SCHOOLS, PHYSICIANS AND SCIENTISTS.



This instrument is already in almost daily use in several prominent colleges and schools.

It was used by the inventor to illustrate Dr. H. O. Marcy's paper on Uterine Tumors, at the last meeting of the American Medical Association, at St. Paul, Minn., and received universal praise from all the physicians who saw the illustrations.

It has been exhibited before many of the leading medical societies of the United States, and receives in every instance the highest praise.

A leading journal speaks in favorable terms of this instrument, as quoted below:

"Its use as a means of instruction is of great value, as an object can be shown with as equal facility to a large class or audience, as to a single person. In the matter of economy, without taking into consideration the superiority of its work, it is in advance of an ordinary stereopticon or microscope, as sunlight is cheaper than artificial light."

This combination consists of a mirror attached to a blind or screen, and worked on a vertical and horizontal axis by means of spur-wheel gears, connected with thumb screws inside the blind.

On the inside of the blind or screen is placed a condensing lens  $4\frac{1}{2}$  inches in diameter, set in a polished brass tube; into this tube slides another, three inches in diameter, for changing the focal distance between the condensing lens and the objectives of the Stereopticon and Microscope.

When the Stereopticon is to be used, the objective is screwed into the sliding tube, and the mirror adjusted so as to reflect the sun's rays through



the condensing lens and objective. The views are then placed in front of the condensing lens (a slide and spring are so arranged as to center each one), and an image is projected on the screen.

To use the Solar Microscope, remove the Stereopticon objective and screw the Microscope in its place. By moving the draw tube, the focal distance is arranged between the condensing lens and objective. A mounted object is then placed under the spring clips of the stage, and the focus adjusted by the screw under the Microscope; a clear and well-defined image is seen on the screen.

*To use the Solar Microscope as an ordinary monocular*, unscrew it from the Stereopticon, and place on the microscope stand, and fasten with the thumb-screw. Slide the draw-tube, which holds the eye-piece into the solar tube, and it is ready to use. This arrangement gives a very solid stand, with coarse and fine adjustments, which are very perfect, and can be used with objectives of high power. This instrument has the society-screw, and any make of objective having the same can be used with it.

By the aid of the Solar Stereopticon, the natural sciences can be finely illustrated, viz.: Anatomy, Physiology, Philosophy, Astronomy, Geography, Botany, Zoölogy, etc.

By the aid of the Solar Microscope, Physiology, Pathology, Histology, etc., can be illustrated with genuine sections. A shadow of the circulation of the blood can be thrown on the canvas; also the images of living animalculæ, minute insects and aquatic animals, giving all their motions, and such as are transparent showing the beating of the heart and motion of all the internal organs, thus giving a chance to study their habits. In fact, there is no limit to the use of this combination.

With this instrument, an object can be shown as easily to a large class or audience as to one person.

As sunlight costs nothing, and is much more powerful than the oxyhydrogen light or any other artificial light (the oxyhydrogen costs about \$2.00 per hour), the Solar Microscope and Stereopticon Combination of Dr. McIntosh certainly recommends itself to the public for this feature alone.

The great objection to gases, aside from the expense, is the trouble and danger attendant while making them; also the costly apparatus which the process requires (suitable gas apparatus would cost \$150). When gases are required, it takes at least one-half day for an expert to make enough for one hour's entertainment.

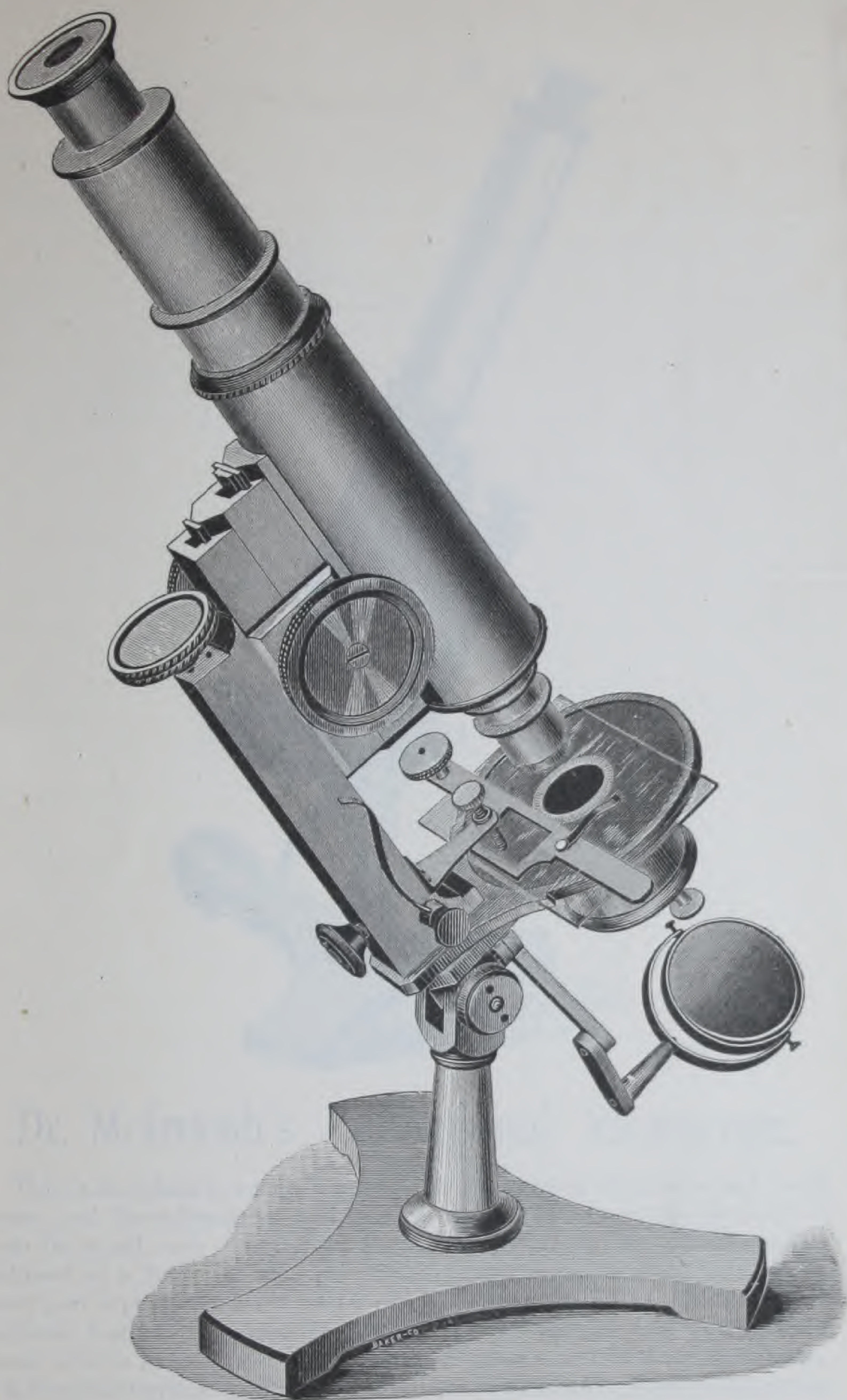
All this cost and trouble is obviated by using the above combination.

The price is so low that it is brought within the reach of every school in the country. When School Boards and Teachers see what can be accomplished with it, by way of illustrating, they will not do without it.

This instrument can be attached and used with any kind of artificial light  
Price of Solar Microscope and Stereopticon complete, as follows:

One large adjustable Mirror, for reflecting sunlight through the condensing lens; One  $4\frac{1}{2}$  Condensing Lens, set in large polished brass tube, with draw-tube and space in large tube to receive the Stereopticon slides; One Stereopticon Objective, with two achromatic combinations, for high and low power; One Solar Microscope; One Stand and Draw Tube, to use the Solar as a monocular; One A and C eye-piece, one,  $1\frac{1}{2}$  inch and  $\frac{1}{2}$  inch, first-class Microscopic Objectives.....\$250 00





## DR. MCINTOSH'S PROFESSIONAL MICROSCOPE.

This is first-class in every respect. It has a heavy brass base and stand, coarse and fine adjustment and society screw. New broad gauge (or Butterfield screw) nickel plated draw tube, new style clips and movable glass stage. The stage can be removed from its stand, and screwed on the draw tube of the Solar Stereopticon, and used as a Solar Microscope. This change requires no adjustment, as every part is perfectly fitted, and it can be done in a moment. This is a very desirable feature, as parties purchasing this instrument can, at any time, obtain a Solar Stereopticon, which will give them a perfect Solar Microscope. It is furnished with a one-fifth and three-quarter inch Achromatic Objectives, A and C Eye piece, sub-stage, plain and concave Mirror, in polished black walnut case, with lock and handle.

Price ..... \$95.00

We can furnish Microscope stands without Objectives, with one Eye-piece, ranging in price from \$22.00 to \$500.00.



We have many inquiries in regard to the utility of the solar microscope and stereopticon in the illustration of scientific and popular lectures before classes of students and public audiences. In answer, we give a few of the many notices received.

[*From Philadelphia Medical and Surgical Reporter of June 17, 1882. Report of American Medical Association, held at St. Paul, Minn., June 6, 1882.*]

The last paper at the morning session was read by Dr. H. O. Marcy, of Boston, who had for his subject "Uterine Tumors." The method by which the lecture was demonstrated, the means used being a solar microscope and stereopticon, excited a large degree of interest, owing to the wonderful clearness and brightness of the subjects cast upon the screen.

After the termination of the lecture, in obedience to the expressed wish of many of the physicians, the inventor, Dr. L. D. McIntosh, of Chicago, explained fully the principles of this solar microscope, an explanation that was listened to with much interest and close attention. This solar microscope may truly be considered a great aid to scientific investigation. By its aid physiology, pathology, histology can be studied, with illustrations of genuine sections. The circulation of the blood can be mirrored forth with startling distinctness; images of living animalculæ, minute insects and aquatic animals, with all their motions, thoroughly portrayed, and in cases where they are transparent the beating of the heart and movements of the internal organs are vividly shadowed forth upon the canvas in a degree of perfection almost beyond belief. It is a combined instrument, and can be used as an ordinary monocular microscope and as a stereopticon. It is, however, very simple in its arrangement, there being no complicated parts that are liable to get out of order. The stereopticon proper is similar in appearance to the ordinary stereopticon, sunlight, however, being used instead of artificial light. This combination adds much to the value of the invention, and its utility is very largely enhanced. Its use is not confined to physicians and scientists, for it is an instrument that should be in all educational institutions of the higher grades. Its use as a means of instruction is of great value, as an object can be shown with equal facility to a large class or audience as to a single person. In the matter of economy, without taking into consideration the superiority of its work, it is in advance of an ordinary stereopticon, as sunlight is cheaper than artificial light. Another feature is that it is exceedingly portable, and can be placed in position in a very short time. The ordinary power is that of 500 diameters, although, with higher objectives, it is capable of attaining a power of 1,500 diameters. Taken altogether, it is truly an invaluable invention, and its use will be of an extended nature.

*From Martins' Druggists' Directory.*

#### **REPORT OF THE AMERICAN MEDICAL ASSOCIATION AND EXHIBITS.**

RICHMOND, Va., May 6, 1881.

Dr. L. D. McIntosh, of Chicago, occupied a prominent share of the interest taken in the exhibition. One of the most interesting features was a view shown with his solar microscope of a live frog's foot, showing the circulation of the blood through the veins and arteries.

Morris, Ill., August 7th, 1883.

*to whom it may concern:*

During the past year, I have used Dr. McIntosh's Solar Microscope and Stereopticon in connection with school work. I recommended our Board of Education to purchase this instrument because I believed it would furnish an excellent means for a vivid illustration of topics in several subjects, and give pupils an added interest in the subjects themselves. I am well pleased with the result. Our pupils in geography have gone with me on imaginary journeys to cities and bodies of water, about which they had studied in the text-book, and not only have they been delighted during the hour thus employed, but they have been better fitted for further study. The Stereopticon has been found exceedingly helpful also with classes in ancient and modern history, and in astronomy.

The Solar Microscope, I have found to be of especial benefit to our classes in physiology and zoology because with it images of sections of animal tissue, mounted specimens of insects, and living animalcules can be thrown upon a screen, and shown at once to an entire class. If Boards of Education will purchase this instrument, and if teachers will use it, I am sure, that the money expended, and the necessary time employed, will not be wasted.

L. T. REGAN, Sup't Public Schools.



## MICROSCOPY AND PATHOLOGY.

As the successful study of Pathology is dependent on the Microscope, as shown by the discovery of the tubercle parasite bacillus, its importance cannot be over-estimated. It touches a question in which we are all interested—that of experimental pathology. Dr. Koch discovered, by a process of inoculation, this terrible parasite, and traced it through all its stages of development and various modes of action.

Prior to Koch, many eminent physicians demonstrated, beyond a doubt, that phthisis was communicable, and the Berlin physician directed his experiments to determine the precise character of the contagion. This he accomplished by the inoculation of animals with tuberculous matter, which reproduced the disease in every instance; and by cultivating the contagion through long periods of time, and through successive generations, and by careful microscopic examination, discovered the specific bacilli which caused tubercle.

This discovery of Koch deals with a disease which, in point of mortality, stands at the head of the infectious diseases. If, as Dr. Koch says, the seriousness of a malady be measured by the number of its victims, then the most dreaded pests which have ravaged the world—plague and cholera included—must stand far behind the one now under consideration. Koch makes the startling statement that one-seventh of the deaths of the human race are due to tuberculosis, while one-third of those who die in active middle age are carried off by the same cause. In no way could this great discovery have been made but by the aid of the microscope.

However startling it may be to many, we believe the result of Dr. Koch's research will be the opening of the door to future discoveries, and that the whole list of zymotic diseases are, without doubt, due to specific bacilli, and that the time is not far distant when the fact will be demonstrated beyond a doubt.

In view of these discoveries, the microscope becomes indispensable to the physician who desires to keep pace with the scientific investigations of the day. Any physician can easily see the bacilli with a microscope capable of magnifying 350 to 500 diameters, by examining tuberculous matter prepared after the following simple direction of Baumgarten:

“HOW TO DEMONSTRATE TUBERCLE BACILLI IN THE SPUTUM OF PHTHISICAL PATIENTS.—Baumgarten recommends the following method as more convenient than that employed by Koch, and as equally efficacious: A portion of the sputum is dried on a cover-glass, and then treated with potash—one or two drops of a thirty-three per cent solution of caustic potash added to a watch-glass of distilled water. The tubercle bacilli can then be readily seen with a magnifying power of four or five hundred diameters, and a little pressure renders them still more distinct from the enclosing detritus of tissue. In order to preclude the possibility of confounding the bacilli of tubercle with those of other species, the cover-glass may be raised and placed aside until the layer of fluid on its under surface is dry, and then passed two or three times through a gas flame, and then on it may be placed a drop of an ordinary watery solution of aniline violet or any other nucleus-tinting preparation of aniline. All the putrefaction bacilli appear under the microscope as an intense blue or brown (according to the testing agent and its strength), while the tubercle bacilli remain absolutely colorless, and can be seen with the same distinctness as in the ordinary potash preparation. The whole process does not occupy more than ten minutes.”



## OBJECTIVES FOR THE MICROSCOPE.

We keep in stock William Wales celebrated Microscopic Objectives, which are unsurpassed for *power of penetration, sharp definition and flatness of field*.

The following reports of awards speak in the highest terms of the superior qualities of his objectives:

### REPORT ON AWARDS.

#### INTERNATIONAL EXHIBITION.

PHILADELPHIA, 1876.

WILLIAM WALES,

Fort Lee, New Jersey:

These objectives are unsurpassed by any known to the reporters for all the qualities desirable in Microscopic Objectives. There are in the series exhibited nine glasses, varying from four inches to one twenty-fifth of an inch. The low powers give great penetration, with sharp definition and perfect flatness of field. The higher, with equal definition, resolve the most difficult tests heretofore attempted. Mr. Wales was the first optician to construct an objective capable, by screw-collar adjustment, of working equally well, wet or dry. The first glass made by him on this principle was produced in 1867.

F. A. P. BARNARD, JUDGE.

First Premium and Medal Awarded Paris Exhibition, 1867; American Institute, Boston, Etc.

### PRICES OF WILLIAM WALES' OBJECTIVES.

#### "ECONOMIC" SERIES.

1½	inch angle of Aperture,	15°	-	-	-	-	-	\$6 00
¾	"	20°	-	-	-	-	-	6 00
½	"	80°	-	-	-	-	-	12 00
¼	"	120° Immersion	-	-	-	-	-	20 00
1/10	"							

#### "PHYSICIANS" SERIES.

1½	inch angle of Aperture,	23°	-	-	-	-	-	\$15 00
¾	"	30°	-	-	-	-	-	15 00
½	"	100°	-	-	-	-	-	20 00
¼	"	135° Immersion	-	-	-	-	-	25 00
1/10	"	150°	-	-	-	-	-	30 00
1/15	"							

#### FIRST QUALITY LENSES.

4	inch angle of Aperture,	9°	-	-	-	-	-	\$15 00
3	"	12°	-	-	-	-	-	17 00
1½	"	23°	-	-	-	-	-	17 00
1	"	25°	-	-	-	-	-	17 00
¾	"	30°	-	-	-	-	-	17 00
½	"	75° Adjustable	-	-	-	-	-	30 00
1/10	"	95°	-	-	-	-	-	35 00
1/10	"	115°	-	-	-	-	-	40 00
1/10	"	100°	-	-	-	-	-	30 00
1/15	"	135°	-	-	-	-	-	35 00
1/15	"	170°	-	-	-	-	-	40 00
1/20	"	170°	-	-	-	-	-	45 00
1/20	"	170°	-	-	-	-	-	60 00
1/25	"	170°	-	-	-	-	-	65 00
1/25	"	160°	-	-	-	-	-	100 00



## TO THE PROFESSION.

Physicians often write to us inquiring if our Combined Batteries meet the wants of the profession, and if those using them are pleased with them. To answer these questions, we publish a few of the many letters we receive from physicians using our batteries.

We give a copy of a letter from George M. Beard, A. M., M. D., member of the New York Society of Neurology and Electrology; Fellow of the New York Academy of Medicine; member of the New York Medical County Society; Physician to Demilt Dispensary; Department of Electro-Therapeutics and Nervous Diseases, etc., who is using one of our Combined Batteries:

NEW YORK, 13 West Twenty-ninth street, February 15, 1881.

Dear Sir—I have now used your battery a number of weeks, and am gratified to be able to report that it is a success in all respects so far as I can see. I was fearful lest the Faradic current might not work after long usage; *but this fear has not been justified by the facts.* I have delayed replying to your letter because I wished to first satisfy myself in regard to the staying power of the battery, for I have so many batteries and electrical appliances sent to me for trial, which, on long use, prove to be of no value, though at first they promise well, that I prefer to take time before giving an opinion. My closets are filled with wrecks of batteries that started out with good prospects but have disappointed both the inventors and myself.

Yours truly,

GEORGE M. BEARD.

The following letters from A. D. Rockwell, A. M., M. D., Fellow of the New York Academy of Medicine; member of the American Academy of Medicine; member of the American Neurological Association; Electro-Therapeutist to the Woman's Hospital of the State of New York, etc.:

NEW YORK, 46 East Thirty-first street, March 8, 1881.

DR. L. D. McINTOSH:

My Dear Sir—I have tested your apparatus and AM EXCEEDINGLY WELL PLEASED WITH IT. In it are combined PORTABILITY, STRENGTH, AND ELEGANCE OF CONSTRUCTION; these advantages, in connection with the Faradic attachment, from which comes an UNUSUALLY FINE AND PLEASANT CURRENT, render your batteries a VALUABLE ADDITION.

I regret that it was too late to give cuts and description in my book (Medical and Surgical Electricity). On the very first opportunity, however, I shall give them room, and in the meanwhile, shall take occasion as opportunity offers to call attention to their merits.

Sincerely yours,

A. D. ROCKWELL.

NEW YORK, EAST THIRTY-FIRST STREET, March 18, 1884.

Dear Sir—The Combination Battery arrived safely, and I must say that I am highly pleased with it, especially as I was not aware that you had so altered it for the better as to do away with the tedious process of screwing the plates down. Several physicians who have since called in to ask my advice about the purchase of apparatus have examined it, and are equally well pleased.

Very sincerely yours,

A. D. ROCKWELL.

Prof. F. C. Wilson, M. D., of Hospital College of Medicine, Medical Department of Central University, speaks very favorably of our battery in the following letter:

LOUISVILLE, Ky., January 28, 1881.

McINTOSH GALVANIC BELT AND BATTERY COMPANY,

192 AND 194 JACKSON STREET, CHICAGO, ILL.:

Gents—The battery was received in due time, and I am much pleased with it and will take pleasure in recommending it whenever I can.

Very truly yours,

FRANK C. WILSON.

KENTON, Ohio, October 16, 1882.

DR. McINTOSH:

Dear Dr.—The Battery was received yesterday. I tried it to-day. I am highly gratified with the result. Its activity is splendid, calm, sure, and stronger than I anticipated. I cannot see how it could get out of order with any decent usage. It is just grand in every particular.

E. B. HIERSLAND.

SHERIDAN, Ill., July 28, 1882.

Gents—I have had the Battery I purchased of you (an eighteen-cell with Faradic coil) in nearly constant use, side by side with other batteries, and can recommend it in the highest terms.

C. A. DAVID, M. D.



May 11, 1881.

*Dear Sir*—Your Battery I consider the most complete and beautiful one for the price I have ever seen. Both currents work equally well, and I cordially recommend it.

EDWARD C. MANN, M. D.,

Physician in Chief Sunnyside Retreat for Nervous Diseases, Dipsomania and Opium Habit.

Dr. Parr, of Indianola, is using our Office Table Battery. The following letter expresses in few words his appreciation of it:

INDIANOLA, Iowa, February 4, 1881.

McINTOSH BATTERY AND BELT COMPANY, CHICAGO ILL.:

*Gentlemen*—The Grenet cell has been received, and connected with battery. It works nicely. I think that I have now the finest, best arranged and most complete battery in the State.

Very respectfully, etc.,

THOMAS S. PARR, M. D.

COLUMBIA, La., May 10, 1883.

McINTOSH GALVANIC AND FARADIC BATTERY COMPANY, CHICAGO, ILL.:

*Gents*—The Battery is highly satisfactory. I am proud to assure you that both the Faradic and Galvanic parts are simply perfect. You are at liberty to make such use of this assertion as you may think proper.

Respectfully yours,

J. E. WRIGHT, M. D.

CINCINNATI, Ohio, January 4, 1884.

THE McINTOSH GALVANIC AND FARADIC BATTERY COMPANY:

*Gentlemen*—Herewith I have the honor to acknowledge receipt of goods and bill. Everything in perfect order and handsomely made. The Grenet cell works with great power and steadiness. The Eye Magnet is indeed a wonderful invention, works like a charm, and, therefore, must be of great utility. Thanking you for the promptness and dispatch, I remain,

Respectfully,

DR. H. C. BECK.

OLIVET, Mich., July 22, 1882.

*Gents*—Am more than pleased with my twenty-four-cell Galvanic and Faradic Combined Battery. It works like a charm, and is so simple am sure it will continue to please me.

Very truly,

W. A. MILES.

BUSHNELL, Ill., February 27, 1884.

McINTOSH BATTERY COMPANY:

*Sirs*—Battery received. After a single trial am convinced that it stands at the head of batteries.

Respectfully,

J. P. DIMMIT, M. D.

COLLEGE OF PHYSICIANS AND SURGEONS, }  
KEOKUK, Iowa, October 28, 1882. }

McINTOSH GALVANIC AND FARADIC BATTERY COMPANY:

*Gents*—The eighteen-cell Galvanic and Faradic Battery is giving me good satisfaction. I do not think it can be improved upon.

Yours, very truly,

JOHN NORTH.

ST. LOUIS, Mo., December 3, 1883.

McINTOSH BATTERY COMPANY:

We congratulate you on the appearance and qualities of your new batteries. They are the handsomest and most perfect in the market.

Respectfully,

A. M. LESLIE & CO.,  
Surgical Instrument Makers.SPRING BEACH HOTEL AND SANITARIUM, }  
ROME CITY, Ind., July 26, 1882. }

*Dear Doctor*—I set up the office Battery, and am now using it. It works like a charm. I like it much. I am very thankful I have your Battery, for in it I find just what I want.

Yours, with much respect,

CHARLES A. WILSON.

MINNEAPOLIS, Minn., December 18, 1880.

McINTOSH GALVANIC BELT AND BATTERY COMPANY:

*Gentlemen*—I ordered of you, through Mr. Thomas Gardiner, of this city, one of your Galvanic and Faradic Batteries, and, after using it nearly every day for three weeks, can say that I like it better than any other instrument of the kind I ever used (Kidder, Talbot & Fleming). I have taken pains to show your battery to some of my professional brethren, and have not heard one of them make a disparaging remark concerning it. The beauty of your instrument, to me, is the ease and accuracy with which one can exhibit the current and can change from the Faradic to the Galvanic. A case may be improved by the Faradic current up to a certain stage, and then the physician may want to carry on the improvement with the Galvanic current, and what is simpler or easier than to do so with your instrument. *You deserve the thanks of the profession for your ingenuity.*

Very truly yours,

A. A. CAMP, M. D.

WASHINGTON, Mich., February 5, 1881.

*Sirs*—I bought one of your eighteen-cell combined Galvanic and Faradic Batteries from A. Kuhlman, of Detroit, and to say that I am pleased with it but faintly expresses the admiration I have for it, which, for beauty, compactness, power and utility, is equaled by none. In a word, it is the *ne plus ultra* of Portable, Combined Galvanic and Faradic Batteries.

I am, etc., Yours,

ALBERT YATES, M. D.



MARENGO, Ill., January 25, 1881.

McINTOSH GALVANIC BELT AND BATTERY COMPANY, CHICAGO, ILL.:

Sirs—Bifurcated cord received, and I like it very much. I have used your Galvanic and Faradic Battery for four months, and like its action very much. Also, the combination makes it doubly prized, as every physician in active practice has long felt the need of easy access to one or both currents, and your Battery covers this ground, besides being convenient to carry for a practitioner.

Yours,

F. L. NUTT, M. D.

ASBURY PARK, N. J., December 22, 1880.

McINTOSH GALVANIC BELT AND BATTERY COMPANY, CHICAGO, ILL.:

I have used the Battery about twenty times during the time I have had it, and I am well pleased with it. I would not exchange it for any other make in the market. The objection I first saw in regard to removing the zincs out of the fluid, I find to be of no importance whatever, after becoming better acquainted with the Battery.

Yours respectfully,

H. W. GARRISON, M. D.

ORLEANS, Mo., February 26, 1881.

McINTOSH GALVANIC BATTERY AND BELT COMPANY, CHICAGO, ILL.:

Gents—Yours of the 21st instant received. The Battery is a little "gem." It gives satisfaction, and it is a wonder to my medical friends. The medical profession are certainly indebted to the McIntosh Battery Company for bringing out such an efficient combination.

Yours truly,

M. D. BREWER, M. D.

From T. C. Duncan, M. D., Chicago, Ill., author of Diseases of Infants and Children:

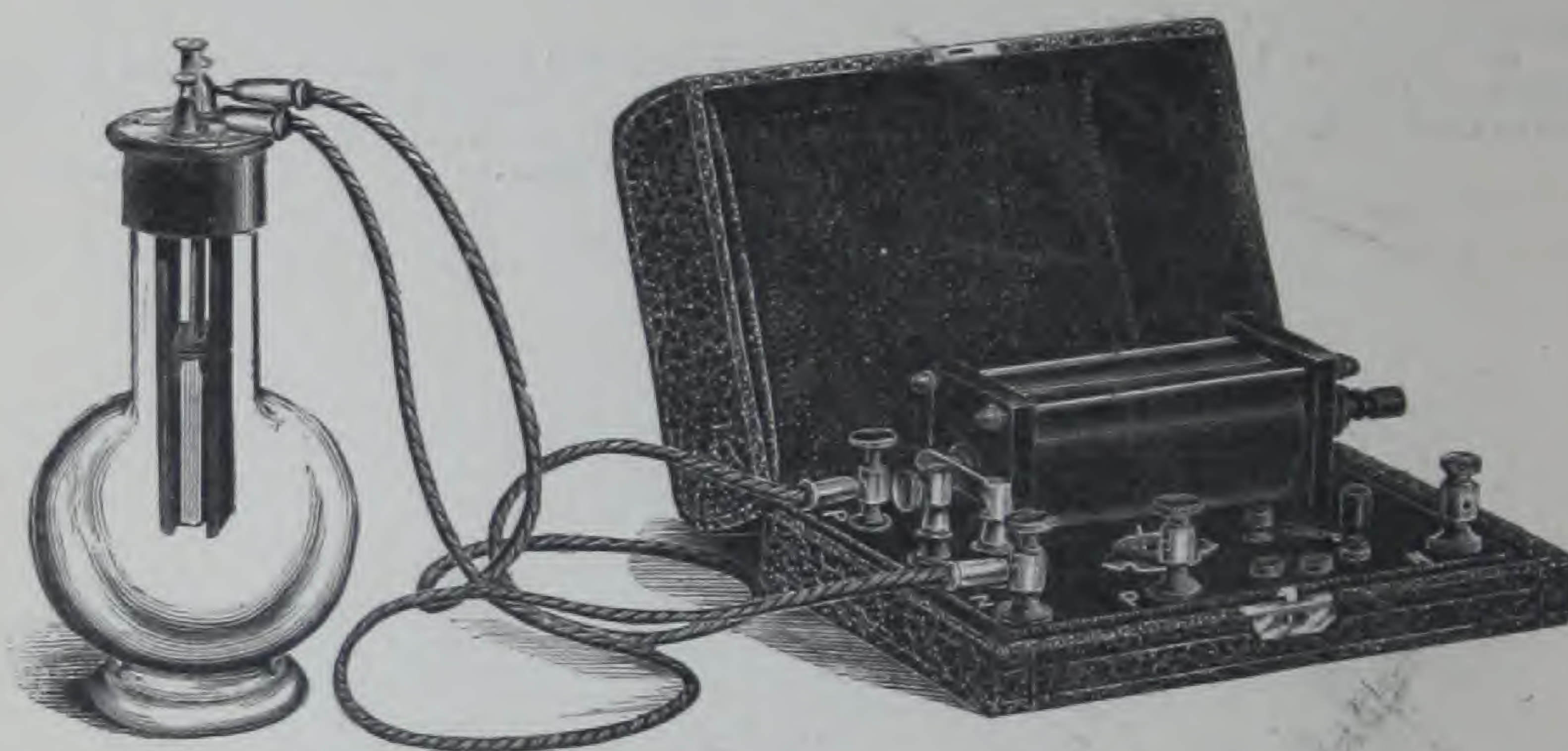
McINTOSH BATTERY COMPANY:

Sirs—I believe I have examined and tested every improved battery made recently for the profession, and am of the opinion that the Combined Galvanic and Faradic, manufactured by you, stands at the head. I use your eighteen-cell instrument daily, and would not be without it.

Yours truly,

T. C. DUNCAN.





This cut should have been substituted for the one on page 39.

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Price of Electric Chair on page 36, \$90.00.











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CCA